

ENVIRONMENTAL HEALTH & SAFETY AUDIT PROTOCOL

DEMONSTRATION

THIS SAMPLE PROTOCOL HAS EACH MODULE
FROM A DIFFERENT COUNTRY TO PROVIDE
AN OVERVIEW OF HOW THAT TOPIC IS
APPROACHED. BEING A SAMPLE PROTOCOL,
THIS CONTENT MAY BE OUT OF DATE.

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ENVIRONMENTAL HEALTH AND SAFETY AUDIT PROTOCOL FOR GREAT BRITAIN

PART 1: INTRODUCTION

Preface

This protocol has been prepared to reflect the principal environmental, health and safety (EH&S) legislation that applies to facilities located in Great Britain. Great Britain encompasses England, Scotland and Wales. Great Britain and Northern Ireland together make up the United Kingdom (UK).

There have always been some material differences relative to Scotland in the administration and enforcement of EH&S law. The Scottish Parliament has passed a number of separate statutes on water and nature conservation, as well as statutory instruments on issues such as waste, air quality and PCBs. In substance, however, Scottish legislation mirrors the requirements applying to England and Wales. Wales tends to have the same primary legislation as England, but can have separate statutory instruments, e.g., contaminated land. The Welsh Assembly has passed very few statutory instruments in the environmental area – most statutory instruments apply to both England and Wales. Where major geographical distinctions are found, they are specifically noted within the applicable protocol sections. Otherwise, the reader should assume that the requirements apply throughout Great Britain.

Northern Ireland is specifically not covered by this protocol. Northern Ireland has separate EH&S legislation and it must comply with the same European legislation as the rest of the UK. On health and safety issues, the position in Northern Ireland is broadly comparable to that in Great Britain. There are some differences for environmental issues where the legislation in Northern Ireland is still catching up with some of the more recent changes that have taken place in Great Britain.

This introductory section begins with a general summary of the governmental structure and how environmental legislation is developed, administered, and enforced in Great Britain. This is followed by a discussion of various topics, including the following:

- Audit Privilege
- Access to Information
- Contaminated Land
- Property Transfer Legislation
- Reporting Obligations Concerning Spills and Releases

Various regulatory and other country-specific informational sources and contacts are also presented in this section. The section concludes with a summary description of the organization of the audit protocol in its entirety.

Governmental Overview

A map of the United Kingdom, which includes Great Britain and Northern Ireland, is provided at the following web link: <https://www.cia.gov/library/publications/the-world-factbook/geos/uk.html> (last accessed in April 2010). England is composed of 56 unitary authorities and 27 shire counties split into 201 (non-metropolitan) districts. Wales consists of 22 unitary authorities while Scotland is divided into 32 council areas, including the 3 island councils. Northern Ireland consists of 26 district council areas. A list of these various subdivisions is provided in Table 1-1.

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Governmental Structure

Please note that following a general election in May 2010 the United Kingdom has recently been subject to a change in government. This change may result in some of the governmental departments and structures referred to in this protocol being changed by the new government over the coming months.

Great Britain is a limited monarchy with an unwritten constitution that is based upon statutes, historic documents (Magna Carta, the Petition of Right and Bill of Rights), common law and custom. The “constitution” is flexible and can be changed by an act of Parliament. The British monarch is the head of state.

The executive authority is vested in a Prime Minister, who is head of Government, and a committee of ministers who form a cabinet. The Prime Minister is usually the leader of the political party having a majority in the House of Commons, which is part of the bicameral Parliament. Cabinet members are selected by the Prime Minister from members of both houses of Parliament, though most are from the House of Commons. These ministers head the various governmental departments. In addition, the individual secretaries of state for England, Scotland, and Wales (and Northern Ireland) also serve in the cabinet. These secretaries serve as administrative heads of each of these geographical divisions. Following referendums that were held during the course of 1997, both Wales and Scotland now have their own regional assemblies, which have legislative autonomy in relation to devolved matters.

Governmental departments have responsibility for different areas of policy and are staffed by civil servants.

The legislative branch consists of two houses, the House of Commons and the House of Lords, which together form the Houses of Parliament. The House of Commons consists of members of parliament (MPs) who are popularly elected from each of 646 geographical constituencies, with each constituency being represented by its own MP. The House of Lords was reformed in 1999 following an expressed desire on the part of the current Government to eliminate the role of hereditary peers. A compromise was reached and there are now 91 hereditary peers (whose titles can be inherited), about 619 life peers (since 2000, generally proposed by an Appointments Commission and whose titles cannot be inherited) and 26 members of the church. The members of the House of Lords are not elected. Life peers typically are distinguished judges or those who have been recognized for their service to the Government.

The controversial *Constitutional Reform Act 2005* created a new, independent, Supreme Court and from 1 October 2009 the Supreme Court replaced the House of Lords as the highest court in England, Wales and Northern Ireland. As with the House of Lords, the Supreme Court hears appeals from the Court of Appeal and the High Court (only in exceptional circumstances). In relation to Scotland, the Scottish High Court of Justiciary is the highest court for criminal cases, but the Supreme Court is the highest court for civil appeals from the Court of Session in Scotland.

Appeals to the Supreme Court are normally heard by 5 Justices (formerly Lords of Appeal in Ordinary, or Law Lords), but there can be as many as 9. The first members of the UK Supreme Court are the 12 previous Law Lords (who are now not allowed to vote on legislation in the House of Lords). Future judges will simply be known as Justices of the Supreme Court. The appellate functions of the House of Lords have been taken over by the UK Supreme Court, but the Supreme Court will not have jurisdiction over constitutional matters.

The Court of Appeal is divided into two divisions, civil and criminal. Below the Court of Appeal is the High Court, which deals with most of the civil cases not dealt with in County Courts (generally the more complicated and difficult cases). The High Court is divided into three divisions, the Chancery Division, the Queen's Bench Division, and the Family Division. Environmental disputes are often heard in the Queen's Bench Division, which handles civil disputes in tort and contract. A number of specialized courts form part of the Queen's Bench Division, including the Commercial Court. Minor civil actions are typically handled by County Courts. There has been considerable discussion in the UK as to the need for and merits of a specific "Environmental Court," but there are no proposals for such a Court being considered seriously by the Government.

Breach of most EH&S legislation is a criminal offense. The Crown Court and the Magistrates' Court both hear criminal cases, with the former handling the more serious cases. Most routine environmental and health and safety prosecutions proceed in the Magistrates' Court although if there is a fatality or serious environmental damage then the matter will most likely be committed to the Crown Court. Criminal appeals from the Crown Court can be referred either to the Queen's Bench Division or to the Court of Appeal, depending on the circumstances of the appeal. There is a separate court system in Scotland, though there is some convergence at the highest level (Supreme Court).

The Scottish system is different because of that jurisdiction's distinct legal system, which is based on Roman law principles rather than the common law. In contrast to England and Wales, prosecutions for breaches of legislation cannot be instituted directly by the Scottish Environmental Protection Agency (SEPA) or the health and safety enforcing authority, but are instituted by the Crown Office and Procurator Fiscal Service (COPFS). The Procurator Fiscal needs to be satisfied that there is sufficient evidence and that the prosecution is in the public interest. The views of the enforcing authority are, however, taken into account.

There is also an important system of local government. It is structured in two contrasting ways. In Scotland, Wales and parts of England, a single tier "all-purpose council" is responsible for all local authority functions (Unitary, Metropolitan or London Borough). The remainder of England has a two-tier system in which two separate councils divide responsibilities between district and county councils.

Local authorities are responsible for the delivery of various services such as education, social services, planning, libraries, waste collection, trading standards, fire and rescue, emergency planning, roads, highways and transportation, housing, and environmental health. Local authorities do not have legislative powers, though they sometimes are authorized by Parliament to make bylaws.

Legislative Process

A cabinet minister initiates most legislation, though in theory any member of Parliament may propose a bill. Local authorities, statutory local service providers and private companies usually promote Private Members' bills. The organization sponsoring the bill must begin the legislative process by submitting a petition. All proposed laws (statutes) require approval by the House of Commons and the House of Lords, though the latter body cannot stop a bill from becoming law if approved by the House of Commons. Acts or laws require Royal Assent. In order to become effective, most environmental statutes require a further step, usually involving a "Commencement Order." There can often be a significant time lag between the Royal Assent and the issuance of the Commencement Order. For example, the contaminated land provisions contained in Part 2A of the *Environmental Protection Act 1990* which were inserted by the *Environment Act 1995* did not come into effect until 2000. Regulations issued by governmental ministries pursuant to legislation, on the other hand, do not require either Royal Assent or, in most cases, the specific approval of Parliament although they are "laid before Parliament" usually for a minimum of three weeks before taking effect.

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Parliamentary acts generally contain a broad framework concerning the issue or issues being addressed. The act itself is referred to as the primary legislation and can only be changed by Parliament. The regulations or orders providing the detailed requirements are referred to as secondary legislation or statutory instruments.

Environmental regulations often require affected parties to employ “best available techniques” or “best practicable means” to prevent pollution, or exercise “reasonable care.” Interpretation of “best practicable means” or “reasonable care” is ultimately a matter for the courts, but regulatory bodies such as the Environment Agency (EA) (a central authority) or the Health and Safety Executive (HSE) (a central authority) provide their interpretations from time to time by issuing circulars, codes of practice, or guidance notes.

Government circulars or statements often deal with environmental matters and are issued by the Department responsible for environmental or planning matters and provide central policy guidance regarding the Secretary of State’s current thinking on a particular issue.

Codes of practice and guidance notes generally consist of more technical instructions on a particular issue. Some health and safety codes of practice carry a higher status, namely approved codes of practice or ACOPs. In a prosecution for breach of health and safety law where it can be shown that the defendant did not follow the ACOP then a court is entitled to find the defendant guilty unless the defendant can show compliance in some other way. The interpretation of EH&S legislation lies ultimately with the courts.

In recent years, a great deal of environment and health and safety legislation has been introduced in Great Britain (and other European Union countries) to implement European legislation and this will continue in the coming years.

Environmental Authorities

The principal UK Government department with responsibility for the protection of the environment is the Department for Environment, Food and Rural Affairs (DEFRA). Responsibility for land use planning lies with the Department for Communities and Local Government (DCLG). Responsibility for climate change lies with the Department for Energy and Climate Change (DECC). Responsibility for health and safety lies with the Better Regulation Executive (BRE) which is part of the Department for Business, Innovation and Skills (BIS). Each has a separate Secretary of State to whom it reports. Their counterparts in Wales and Scotland are referred to as the Welsh Office and the Scotland Office.

Implementation of the law, including enforcement, lies with the various bodies to whom the function has been delegated by legislation. There are a number of bodies charged with enforcement of environmental protection matters. Principal amongst these are the EA in England and Wales and the SEPA in Scotland.

The EA and SEPA are also charged with pollution control duties and both agencies are responsible for issuing environmental permits under their separate pollution control regimes. Headquartered in Bristol, the EA has eight regional offices and various area offices within each region. SEPA is based in Stirling and has various offices throughout Scotland.

Local authorities are involved in certain environmental matters, including the administration of the planning process. In England and Wales, local authorities also have responsibility for issuing environmental permits to certain installations carrying out less significant polluting processes; statutory nuisance issues; and some contaminated land issues.

Health and Safety Authorities

Primary responsibility for the development of health and safety legislation and for the enforcement of health and safety regulations lies with the HSE. The HSE, which reports to the Secretary of State for Work and Pensions, is responsible for developing policy, approved codes of practice and the enforcement of health and safety laws. The functions of the HSE are performed on behalf of the Crown; their staff are civil servants. The HSE operates through local authorities (environmental health officers) to execute some of its duties in relation to commercial premises, mainly involving the distribution, retail, office, leisure and catering sectors.

The *Health and Safety at Work, etc. Act 1974* operates by imposing certain over-riding general duties on employers. To the extent that it is “reasonably practicable to do so,” these duties include (i) ensuring the health, safety and welfare of their employees; (ii) conducting their undertakings in such a way as to ensure that persons not in their employment (such as independent contractors or the public) are not exposed to risks to their health and safety; and (iii) ensuring that the plant, premises, or substances in the premises are safe and not imposing risks to health.

The critical term, “so far as is reasonably practicable,” is not defined in the legislation, but there is HSE guidance on its meaning. The HSE in the *Health and safety regulation, a short guide or HSC13 (rev 1)* states that so far as is reasonably practicable means “an employer does not have to take measures to avoid or reduce the risk if they are technically impossible or if the time, trouble or cost of the measures would be grossly disproportionate to the risk.” Reasonable practicability operates as a defense. The burden of establishing the defense is on the defendant (i.e., the prosecution only need prove that the plant or system of work was unsafe to make a prima facie case) and the burden of establishing a reasonably practicable defense is becoming harder to achieve.

There is no statutory duty to carry out health and safety audits. However, in practice many British employers consider that health and safety audits are a necessary and appropriate means of ensuring that their general duties are satisfied. There is also a growing trend in Great Britain towards the use of risk assessment techniques and the requirement for a general risk assessments embodied in *The Management of Health and Safety at Work Regulations 1999*. This is coupled with a duty (found in the same regulations) to monitor and review preventive and protective measures. More specific risk assessments are also required in other regulations, including those involving exposure to substances hazardous to health, asbestos, lead, noise, manual handling and display screen equipment.

Enforcement of EH&S Regulations

Case law is developing rapidly in the EH&S field and there has been a noticeable increase in the number of prosecutions for violation of both health and safety and environmental legislation. Prosecution for both environmental and health and safety breaches focuses on not only the company or business, but also the individual director or employee. Fines for environmental offenses are generally lower than those for serious breaches of health and safety legislation. The maximum fine in the Magistrates Court for health and safety offenses is £20,000. The maximum was previously only £5,000 but this was increased by the *Health and Safety (Offences) Act 2008* which came into force on 16 January 2009. In the Crown Court, fines are unlimited. Individuals can also be sent to prison for breaches of the *Health and Safety at Work, etc. Act 1974* (this is as a result of the *Health and Safety (Offences) Act 2008*). The maximum prison sentence in the Magistrates Court is 6 months, and in the Crown Court is 2 years. These limits do not apply to individuals convicted of gross negligence manslaughter. The maximum fine for environmental offenses varies depending upon the individual offense, but some offenses now have maximum fines of £50,000 and/or 12 months imprisonment in the Magistrates Court, and unlimited fines and/or up to 5 years imprisonment in the Crown Court.

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The *Regulatory Enforcement and Sanctions Act 2008* gives Ministers the power to make orders (using statutory instruments) giving regulators the power to impose four types of civil sanctions on businesses. This provides an alternative to prosecuting in the criminal courts. These civil sanctions are fixed monetary penalties, discretionary requirements, stop notices and enforcement notices. Regulators will only be allowed to use the new sanctions once the Minister responsible for that particular policy area has made an Order granting them the power to do so. The first such Order took effect on 6 April 2010 (*Environmental Civil Sanctions (England) Order 2010*). It gives powers in relation to a number of breaches, including nature protection, water and other matters. However the relevant agencies have indicated that they will not start using these powers until around September 2010.

Difficulties with successfully prosecuting companies for manslaughter following serious health and safety breaches resulting in multiple fatalities led to extensive discussion and consultation on a new statutory offense of corporate manslaughter. The *Corporate Manslaughter and Corporate Homicide Act 2007* came into force on 6 April 2008. The new offense of corporate manslaughter (England and Wales) or corporate homicide (Scotland) applies to all companies, charities, police forces, government departments and a number of other organizations, where a gross failing by senior management to take reasonable care for the safety of workers or members of the public to whom a duty is owed results in a person's death. The penalties available to the Court include an unlimited fine publicity orders and/or a remedial order. The new offense would be committed by the company—the legislation does not create new liabilities for directors of an organization convicted of corporate manslaughter although all of the existing offenses, under other legislation such as the *Health and Safety at Work, etc. Act 1974*, for directors will still apply.

Both the HSE and the EA have openly adopted a “name and shame” policy. This is facilitated by the use of press releases and the placing of registers of offenders on the regulatory authority's web sites. The EA also produces a “Spotlight on Business Environmental Performance,” an annual round-up of the environmental performance of business in England and Wales. The most recent report was released in July 2008 and covers the year 2007. The 2008 report includes a list of the top 10 fines in 2007 (naming individual polluters), in addition to lists of the top fines and polluters within specific industries (e.g. chemicals, water and construction). Overall, the EA noted a substantial increase in successful prosecutions. In addition, there has been an increase in the number of individual directors fined and, occasionally, imprisoned. A Spotlight on Business Environmental Performance for the year 2008 has not been published to date; however, the Environment Agency released information stating that in 2008 it successfully brought 722 cases against companies and individuals for environmental offenses, resulting in fines and costs of £5.3 million.

The HSE's website contains the details of any successful prosecution it brings, including the name of the defendant and the fine awarded against it. The HSE also issues press releases following these convictions. However, according to research undertaken by the Centre for Corporate Accountability and published in April 2008, the HSE, in 2007, only issued a press release in 33 percent of all cases and 54 percent of cases involving a work related death. It also suggests that the number of convictions has steadily fallen from 2,115 in 1990/00 to 1,141 in 2006/7.

Administrative Actions

EH&S regulators have a wide range of enforcement measures other than prosecution for a criminal offense available to them.

In the health and safety field, the main measures are “improvement notices” and, in the case of a risk of serious personal injury, “prohibition notices.” An inspector will have grounds to serve an improvement notice where there has been a contravention of a “relevant statutory requirement” (most of the regulations referred to in this protocol are “relevant statutory requirements” for enforcement purposes) or there has been a contravention in circumstances which make it likely that the contravention will continue to be repeated. The notice will specify when the contravention must be remedied. Auditors should check to see that the notice has been complied with, as it is a criminal offense to fail to do so. “Prohibition notices” do not actually require a belief that a provision has been contravened as they are served in anticipation of danger. As such, they can take effect immediately and require the stopping of work. Inspectors may serve notices and also decide to prosecute. There is provision for appeal against improvement and prohibition notices. Appeals are made to the Employment Appeals Tribunal. In the event of an appeal an improvement notice is lifted until the appeal is heard whereas a prohibition notice will remain in place until the appeal unless an application is made, and granted, to have the notice lifted pending the appeal hearing.

There is a register on the HSE website of all improvement and prohibition notices issued by HSE since 1 April 2001. If using this register, great care needs to be taken with the corporate name being searched, as the website is not always consistent in how it names the company concerned. The HSE have publicly stated that officers should now be spending less time on enforcement and more time working with companies on improving health and safety performance (switching from a 60:40 to 40:60 enforcement improvement ratio).

In the environmental field, the main measures are “enforcement notices,” “suspension notices” and “revocation notices” for a breach (or potential breach) of a condition of an environmental permit or where a serious risk of pollution has arisen at an installation regulated under an environmental permit), “abatement notices” (for statutory nuisances), “works notices” (for water pollution) and “remediation notices” (for contaminated land). Enforcement procedures differ between the different pieces of legislation but there is no shortage of actions that environmental regulators can take to secure compliance. Failure to comply with a notice is generally a criminal offense. As a general rule, the fact that a notice has been served will appear on a public register.

The main provisions of the *Regulatory Enforcement and Sanctions Act 2008* came into force on 1 October 2008 and provides regulators with additional civil sanctions (fixed monetary penalties, stop notices and enforcement undertakings) to act as a more proportionate response to cases of regulatory non-compliance normally dealt with in the criminal courts. Further information on the background to the *Regulatory Enforcement and Sanctions Act 2008* is set out under the Criminal Sanctions heading below.

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Civil Liability

The UK still relies heavily on the civil courts as a means of recovering damages or obtaining an order to stop an activity (an injunction or interdict). A defendant may bring a civil action for the recovery of damages when he/she alleges that the defendant is responsible for causing the loss he or she has suffered. In the health and safety field, the liability of an employer at common law is based on the law of negligence or breach of statutory duty. A company may be prosecuted for breach of its general duties under the *Health and Safety at Work, etc. Act 1974* and also be subject to civil claims from employees who have, for example, been exposed to hazardous substances as a result of the failure. In the environmental field lawsuits will usually be based upon nuisance or negligence. In the case of contamination migrating to a neighboring site, the neighbor is probably entitled to an injunction to stop the continuing migration and may also seek the costs of cleaning up as damages. On the whole, damages have tended to relate to injury to persons or property and the concept of ecological damages for harm to the unowned environment is still not an established feature in UK case law—although see the discussion below on the *Environmental Damage (Prevention and Remediation) Regulations 2009*.

In early 2002, the European Commission issued a proposal for a *Directive on Environmental Liability* following over ten years of discussions. It was finally adopted on 21 April 2004 and published in the Official Journal on 30 April 2004. The *Environmental Liability Directive* was implemented in the UK through the *Environmental Damage (Prevention and Remediation) Regulations 2009* which came into force on 1 March 2009.

The Regulations are aimed at the prevention and remediation of environmental damage, specifically damage to habitats and species protected by European Community law, damage to water resources and land contamination. It does not deal with personal injury and traditional property damage. They apply only to damage caused by incidents occurring after 1 March 2009 and are based on the “polluter pays principle.” The idea is that polluters should bear the cost of remediating the damage they cause to the environment, or of measures taken to prevent imminent threat of damage.

Polluters meet their liability in one of three ways: by remediating the damaged environment directly; by taking measures to prevent imminent damage; or by reimbursing the competent authority who, in default, remediate the damage or take action to prevent it. The competent authority is responsible for enforcing the regime and determining remediation standards and in the UK is principally the Environment Agency.

Strict liability applies in respect of damage to land, water and to protected species and habitats caused by activities regulated by specified EU legislation. Fault based liability applies in respect of biodiversity damage from any other activity. Defenses, or exceptions from liability, exist for damage caused by actions of a third party, activities which were undertaken in compliance with a permit and activities which were not, at the time they were authorized, considered to be harmful according to the best available scientific and technical knowledge.

Individuals and others who may be directly affected by actual or possible damage may request action by the competent authority. Judicial review proceedings may be taken where a competent authority refuses to act.

The *Environmental (Prevention and Remediation) Regulations 2009* took some time in arriving due to the difficulties faced by the Government in dovetailing the provisions of the *Environmental Liability Directive* with existing environmental protection regimes in the UK including the *Environmental Protection Act 1990*, the *Water Resources Act 1991*, the *Wildlife and Countryside Act 1981* and *The Control of Major Accident Hazards Regulations 1999*.

According to DEFRA, the Regulations may not have a significant effect on UK business as most aspects are covered under existing legislation and they are aimed at the most significant cases of environmental damage only. DEFRA estimates that fewer than one percent of the approximately 30,000 cases of environmental damage reported to enforcement authorities in the UK each year fall within the scope of the Regulations.

Criminal Sanctions

The philosophy behind criminal sanctions is that punishment is a matter of public rather than private interest. Breaches of EH&S legislation are generally criminal offenses which are referred to as being “triable either way.” This means that they can either be tried in the lower Magistrates’ Courts or in the higher Crown Court. The vast majority of EH&S offenses are tried in the Magistrates’ Courts unless there has been significant damage or harm involved or it is a repeat offense. Fatalities will almost always be tried in the Crown Court. The main difference between the two venues is that the Crown Court involves more formalized evidentiary procedures and increased penalties. Also in the Magistrates’ Court the hearing is before 3 lay Magistrates who are not qualified lawyers or a single District Judge. In the Crown Court the hearing is before a Circuit Judge and a jury. Fines in Magistrates’ Court will typically be up to a maximum of £20,000 with provision for imprisonment of up to two years in the case of more serious offenses (some environmental offenses carry maximums of £50,000 and 12 months imprisonment). Fines in the Crown Court are unlimited with provision for longer periods of imprisonment.

The main provisions of the *Regulatory Enforcement and Sanctions Act 2008* came into force on 1 October 2008. This Act represents the Government’s attempt to take forward some of the recommendations of both the Hampton Review ‘Reducing Administrative Burdens: Effective Inspection and Enforcement’ (March 2005) and the Macrory Review ‘Regulatory Justice: Making Sanctions Effective’ (November 2006).

The Hampton Review concluded that there are currently wide variations and inconsistencies in the application of national standards set in legislation, which result in uncertainty and unnecessary administrative burdens for business. It also concluded that regulators’ penalty regimes are cumbersome and ineffective and recommended that a comprehensive review should take place. This review took place in the form of the Macrory Review, which looked at the regulatory sanctioning regime in the UK. It concluded that many regimes are ineffective, over-reliant on criminal prosecution and lacking in flexibility.

The Act establishes the Local Better Regulation Office, aimed at ensuring a consistent approach to local authority enforcement; introduces a range of administrative sanctions for regulatory non-compliance (which cannot be used until an Order has been made by the relevant Minister); and requires that regulators do not maintain or impose unnecessary burdens. As mentioned earlier, the first such Order has recently been issued.

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In the case of *R v CEMEX Cement Limited (2007) EWCA Crim 1759*, the Court of Appeal held that a fine of £400,000 for an environmental offense (breach of a permit condition resulting in dust escaping from a cement works and dispersing over a wide area) was disproportionate, taking into consideration aggravating and mitigating factors. The fine was reduced to £50,000. The Court set out examples of the factors it would consider when sentencing including: (a) aggravating factors such as: how far short of the appropriate (reasonably practicable) standard the defendant felt; the level of public disquiet where the defendant's (serious) breach resulted in a death; whether the regulatory breach was deliberate in order to cut costs and increase a competitive edge; the degree of risk and extent of damage created by the offense; whether the breach was an isolated incident or continued over a period; the defendant's resources and the effect of the fine on its business; and the defendant's failure to heed warnings; and (b) mitigating factors, such as: the defendant's prompt admission of responsibility and a timely plea of guilty; steps taken to remedy deficiencies after they had been drawn to the defendant's attention; and a good safety record.

Several recent cases have imposed large fines on companies for breaches of environment, health and safety legislation and in some cases surprisingly low fines. Fines for environmental offenses on the whole tend to be lower although the publicity given a conviction is often greater than for a health and safety offense.

Health and Safety Fines

Currently the *Health and Safety at Work, etc. Act 1974* contains powers for unlimited fines in matters dealt with in the Crown Court. Despite this fines still tend to be relatively low. In 2008/9 the average penalty for a conviction under health and safety law was £14,614 per breach. The record for a fine under the *Health and Safety at Work, etc. Act 1974* was set in August 2005 when Transco plc were fined £15 million after four members of a family were killed in a gas explosion caused by a gas leak from holes in a pipe running through the family's front garden.

The Sentencing Guidelines Council's guidelines on *Corporate Manslaughter & Health and Safety Offences Causing Death* state that fines for Corporate Manslaughter will seldom be less than £500,000 and may be measured in millions of pounds. For health and safety offenses causing death, fines will be seldom be less than £100,000 and may be measured in hundreds of thousands of pounds or more.

Below are some recent examples of prosecutions for breaches of health and safety laws:

- The London Central Bus Company Ltd was fined £60,000 and ordered to pay costs of £15,347 at the Central Criminal Court (the Old Bailey) during May 2008 following an accident in which an employee fell into a vehicle inspection pit in October 2005. The employee sustained serious spinal injuries. This followed another incident in the previous year during which an employee died;
- Alfred McAlpine Capital Projects Ltd was fined £250,000 and ordered to pay £5,859 in costs, for breaching the *Health and Safety at Work, etc. Act 1974*, at Maidstone Crown Court on 14 March 2008 following an HSE investigation into the death of a motorcyclist at a road works site in August 2005;
- In October 2009, Carillion Rail and Network Rail were fined £444,000 and £666,000 respectively, plus costs, after two track maintenance workers died in 2004. Three other workers were fined £3,000 and £750 for breaches of Section 7 of the *Health and Safety at Work, etc. Act 1974*;
- In July 2009 Bodycote was fined £533,000 plus costs of £200,000 after two employees died from lack of oxygen after argon leaked into a pit where people were working; and
- In 2009, Scottish Coal was fined £400,000 after pleading guilty to one count of *Health and Safety at Work, etc. Act 1974*, Section 3. Two men, who were employed by a sister company, were killed when their Land Rover was crushed by a one hundred tonne dumper truck.

Environment Fines

Below are some recent examples of fines imposed for breaches of environmental regulations:

- In July 2009, the EA successfully brought charges and a record fine against the drinks manufacturer The Red Bull Company Limited under The Producer Responsibility Obligations (Packaging Waste) Regulations (the Regulations) 2007. Specifically, between 1999 and 2006 the company was not registered under the Regulations; it had failed to meet its recovery and recycling targets; and it had failed to submit any certificate of compliance with the Regulations. The Crown Court fined the company £261,278 and ordered it to pay £3,755 costs and £6,854 compensation to the EA for unpaid registration fees. By not registering it was estimated that Red Bull made a saving of more than £180,000. Mitigating factors in this case included that the company had cooperated fully with the EA. This is the highest fine for any packaging offense nationally; and
- In February 2010, the EA successfully brought charges against a cement manufacturer (Castle Cement Ltd) under the Environmental Permitting (England and Wales) Regulations 2007 for breaches of the company's environmental permit covering the period August 2005 to July 2007. The company pleaded guilty to four offences. Three of the four related to its failure to comply with various conditions of the site's environmental permit resulting in dust emissions, smoke emissions from burning tires and other materials, and unacceptable noise levels, and one to its failure to comply with an enforcement notice. Castle Cement was fined £250,000 and ordered to pay almost £55,000 in costs. The total in fines and costs is one of the highest ever for an environmental offence in the UK, and the biggest imposed for pollution prevention and control offences.

Individual Liability

Individual liability is also a feature of EH&S legislation. Virtually all such legislation contains a provision to the effect that any director, manager or other similar officer can be liable for an offense along with the company if it can be shown that the offense was committed with their consent, connivance or neglect. The courts have sent a number of people to prison for health and safety offenses although these have tended to be directors of small companies. A three month custodial sentence was awarded against an individual for breaches of asbestos licensing legislation when he allowed partial demolition of buildings without precautions to prevent the spread of asbestos contained in roofing sheets and pipe work lagging. Imprisonment for environmental offenses is also increasing with 8 individuals associated with the waste industry being imprisoned in the first 8 months of 2006—a significant increase.

Strict Liability

Most EH&S offenses are strict in nature, that is, that proof of fault is not required if the offending action is proven. There are a few defenses available, the most common being the defense that all due diligence and reasonable precautions were taken to prevent the offense, although this is not available in all cases, e.g., water pollution. There is an “emergency” type defense in most environmental legislation, but it is interpreted in a limited fashion and requires reporting to the regulatory authorities, virtually immediately.

Comments on Enforcement Practices

Both the HSE (2006, revised version of *Enforcement Policy Statement*) and EA (*England and Wales Enforcement and Prosecution Policy, 2008* and guidance, April 2008) have adopted policies and/or principles regarding enforcement designed to ensure compliance with the law, but also to assist and advise business. Both the HSE and EA have also published their specific criteria to help inspectors decide when to investigate and prosecute. Both bodies adopt four principles of enforcement:

- Proportionality in applying law and securing compliance;

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- Consistency of approach;
- Transparency about what is expected; and
- Targeting of enforcement action on those presenting the greatest risk.

Prosecution is not mandatory, but will always be considered “where circumstances warrant it.” This may be the case where (i) prosecution is a way to draw general attention to the need for compliance; (ii) it will act as a deterrent to others; (iii) there is the potential for considerable harm; and (iv) the gravity of the offense taken with the general record and approach of the offender warrants it. In terms of the levels of fines, the Courts have been emphasizing recently that fines should be set at a level whereby they have an impact on shareholders. When considering whether prosecution is an appropriate response the HSE and EA are required to have regard to the *Code of Conduct for Crown Prosecutors* (the *Code*), the latest revision of which was issued in February 2010. The *Code* sets two tests which have to be satisfied if a prosecution is to continue. The tests are:

- The Evidential Test. To satisfy this test the prosecutor must be satisfied that there is enough evidence to provide a “realistic prospect of conviction” against each defendant on each charge. If this test is satisfied the prosecutor should then move on to the second test; and
- The Public Interest Test. A prosecution will usually take place, assuming the evidential test is met, unless there are public interest factors against prosecution which clearly outweigh those factors for prosecution.

Public interest factors for a prosecution would include factors such as a conviction is likely to result in a significant sentence, there is evidence that the offense was premeditated or there are grounds for believing that the offense is likely to reoccur. Public interest factors against prosecution would include where the offense was committed as a result of a genuine mistake or misunderstanding, the loss or harm can be described as minor, or where there has been a long delay between the offense taking place and the date of the trial.

According to the HSE’s most recent report on “Health and Safety Statistics 2008/9” HSE brought 1,245 prosecutions (up from 1,104 for the previous year), and there were 860 convictions. During the same period the HSE served 8,054 enforcement notices. This is a substantial increase on the 7,758 notices issued in 2007/8.

The EA uses a risk screening tool, known as OPRA (Operator Pollution Risk Appraisal) in its work regulating operators under the *Environmental Permitting (England and Wales) Regulations 2010* (including both installations and waste facilities). It is intended that OPRA will be introduced to other permitting regimes in the future.

The OPRA scheme assesses: (a) the environmental risk of an activity/hazards associated with that activity (considering attributes such as the complexity of an activity, emissions and inputs, and location); and (b) how well those risks/hazards are being managed (considering information from management schemes and compliance classification schemes).

OPRA essentially results in a facility being given a score, which represents the inherent level of risk in the process and the environmental performance of the operator in managing that risk. The inspection effort will be targeted towards the higher risk processes based on the OPRA results and is intended to assist delivery of the consistency and transparency criteria of the enforcement policy.

Audit Privilege

Solicitor-client (attorney-client) privilege exists in the UK and extends privilege to all documents and conversations that exist for the purposes of giving and receiving legal advice. The usual rule in litigation is that all relevant material must be disclosed to the other side. If solicitor-client privilege is claimed, then the existence of the document must be disclosed, but it need not be produced. In order for an audit report to be privileged in this way it would be necessary to be able to demonstrate one of two things:

- That it is covered by the “solicitor-client privilege” which protects client-lawyer communications only; and
- That the report is covered by litigation privilege, i.e., it was prepared in contemplation of litigation or if litigation is pending. The other key component to succeed in a claim of solicitor-client privilege is that the document is treated as confidential.

In most cases a routine EH&S audit will not meet these tests. If an organization were contemplating seeking to set up an audit so as to try to attract privilege it would be prudent to seek specific legal advice.

Regulatory authorities are not entitled by their specific entry and investigation powers to compel the production of privileged documentation. However, in the case of environmental legislation, there is an extra provision in the legislation providing a general obligation to require provision of information felt to be reasonably needed in connection with the carrying out of the regulator’s functions.

Access to Information

It is important as a general principle to be aware of what information you can obtain and what information can be obtained about you in addition to simply consulting the public registers.

The *United National Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters* (the *Aarhus Convention*) was adopted on 25 June 1998. The Aarhus Convention establishes a number of rights of the public (individuals and their associations) with regard to the environment including the right of everyone to receive environmental information that is held by public authorities (known as the “First Pillar” of the *Aarhus Convention*).

In 2003 a Directive concerning the First Pillar of the *Aarhus Convention* was adopted (*Directive 2003/4/EC* of the European Parliament and of the Council on 28 January 2003 on public access to environmental information (the *EC Directive*)).

The *EC Directive* was required to be implemented in the national law of the EU Member States by 14 February 2005 and was transposed in the UK on 1 January 2005 by the coming into force of the *Environmental Information Regulations 2004* and the *Environmental Information (Scotland) Regulations 2004*.

Under the *Environmental Information Regulations 2004*, all information relating to the environment held by public authorities must be made public on request in a timely manner (i.e., within 20 working days after receipt of the request).

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Public authorities and other persons who are subject to the obligation to make such information available include all Ministers of the Crown, Government departments, local authorities and other persons carrying out functions of public administration at a national, regional or local level, having responsibilities in relation to the environment; and also any body with public responsibilities for the environment which is under the control of one of the above persons.

Information relates to the environment if it relates not only to the state of any water, air, flora or fauna, soil, or any natural site or other land, but also to activities or measures (including activities giving rise to noise or any other nuisance), which adversely affect or are likely to affect anything mentioned in the preceding list and any activities or administrative or other measures (including any environmental management programs), which are designed to protect anything in the list. Information includes anything contained in records and includes registers, reports and returns, as well as computer records and other records kept in non-documentary form.

The *Environmental Information Regulations 2004* do not require the disclosure of certain specified information provided that the public interest in maintaining the exception outweighs the public interest in the disclosure. This information will, for example include personal information, the disclosure of which would cause a contravention of the *Data Protection Act 1998*, or information, the disclosure of which would affect public security.

Registers

There will be information about many companies contained in public registers. This is available to anyone who wants to see it.

A list of the public registers which the EA is responsible for can be found at <http://www2.environment-agency.gov.uk/epr/index.asp> (last accessed in May 2010). Public registers maintained by SEPA are only available at local SEPA offices.

Contaminated Land

The contaminated land legislation, Part 2A of the *Environmental Protection Act 1990*, came into effect in England on 1 April 2000 and has since been implemented in Wales and Scotland. The legislation introduced, for the first time, a statutory regime with the express purpose of identifying and securing clean up of contaminated land.

The presence of contamination can, in practice, affect the valuation of a property even if there has been no proposal for a remediation notice and the contamination will be addressed in transaction documentation.

The potential for the contamination to cause harm may be significantly increased if the use of the land is changed or if the site is disturbed during redevelopment. Contamination, or the potential for it, will be a material consideration in the granting of a planning permission for redevelopment, particularly if redevelopment might involve a sensitive use such as residential.

What is “Contaminated Land”?

Land will be contaminated in a technical sense if it has present in, on or under it, substances that are not naturally occurring. However, the statutory definition of contaminated land adopted for the purposes of the regime focuses upon the risk of substances present in, on or under the land that give rise to significant harm or to pollution of controlled waters. Radioactive contamination of land was included in the regime from 4 August 2006 by virtue of the *Contaminated Land (England) Regulations 2006*.

The main regulator will be the local authority, although the EA takes over responsibility for securing remediation for more difficult types of site referred to as “Special Sites.” For the purposes of triggering the statutory provisions on contaminated land, land which appears to the local authority to be in such a condition, by reason of substances in, on or under it where either: (i) significant harm is being caused or there is a significant possibility of such harm being caused; or (ii) pollution of controlled waters is being caused or is likely to be caused.

In making this decision, the local authority must follow statutory guidance to be issued by the Secretary of State on the topic. This Guidance is therefore extremely important; it is akin to law and the statutory provisions cannot be interpreted without recourse to it. The guidance is very complex and needs to be read carefully. The latest version of the Guidance was published in September 2006 as DEFRA *Circular 01/2006*. The government announced in February 2010 that it is reviewing this Guidance, so a new version will be issued when that review is concluded. Critical aspects of the Guidance are what harm will be considered to be “significant” and when liability of an appropriate person can be passed to another party.

Liability for Clean-Up

Once the local authority has satisfied itself that land meets the definition of “contaminated” then it must (i.e., it is under a duty to) follow through the statutory process for seeing that it is remediated. At its simplest, this involves requiring appropriate persons to remediate the contamination, often by serving a “remediation notice” on such persons.

In most cases, primary responsibility for the contamination will rest with the person who caused or knowingly permitted the substances to be present on the land (referred to as Class A persons). However, where there are no Class A persons who can be identified or are still in existence, the current owner or occupier of the property will become the “appropriate person” irrespective of fault. The extent of their liability relates to their period of ownership rather than their perceived culpability. The law is applied retrospectively. Identifying the appropriate person is critical for the purposes of allocating liability for clean up. Subsequent owners of a site contaminated by another party who meet the test of a knowing permitter (i.e., know about the presence of the substances and are in a position to eliminate or reduce the seriousness of the contamination) can be Class A persons.

Other Remedies Which May Be Applicable to Contaminated Land

In addition to the legislation enacted as part of the *Environment Act 1995*, there already exists other legislation that can be used to achieve a clean up.

Among the existing legislation in this area are the following:

- Section 59 of the *Environmental Protection Act 1990* entitles the EA to require the owner or occupier of land to remove controlled waste that the EA is of the view has been deposited in contravention of the environmental permitting provisions or in a manner likely to cause pollution of the environment or harm to human health;

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- Section 85 of the *Water Resources Act 1991* in England and Wales and Section 30F of the *Control of Pollution Act 1974* in Scotland make it an offense for any person to cause or knowingly permit any poisonous, noxious or polluting matter or any solid waste matter to enter controlled waters. In the case of historic contamination there is a good argument that the owner of a property, who is aware of its contamination, would be considered to be knowingly permitting such entry;
- Section 161A-161D of the *Water Resources Act 1991* in England and Wales and section 46A-46D of the *Control of Pollution Act 1974* in Scotland gives the relevant Agency the power to serve works notices on persons who cause or knowingly permit poisonous, noxious or polluting matter to enter controlled waters or to be present in a place where such matters are likely to enter controlled waters. Works notices can require the person served to undertake works or operations to prevent the problem arising or to remedy a situation, which has already occurred. Failure to comply with a works notice is a criminal offense and will entitle the relevant Agency to carry out the works itself and recover its costs. The Agency is required to try hard consult with the person who they intend to serve with the works notice, but consultation is not mandatory. There is some guidance on when to use works notices rather than remediation notices, but there is clearly some overlap;
- Section 161 of the *Water Resources Act 1991* in England and Wales and Section 46 in Scotland empower the relevant Agency to undertake appropriate works themselves to prevent poisonous, noxious or polluting matter from entering controlled waters. The Agencies are entitled to recover their reasonable costs for this work from any person who caused or knowingly permitted the matter in question to be present where it was likely to enter controlled waters. Action by the Agencies under Section 161, 161A or 46 or 46A does not require a conviction under Section 85 or 30; and
- Civil claims in negligence and nuisance can also be used.

Clean Up Standards

Clean up standards in Great Britain have historically not had a statutory basis. However, Soil Guideline Values or SGVs based on the CLEA model (Contaminated Land Exposure Assessment) have been published by DEFRA for use by local authorities in determining when land meets the statutory definition of “contaminated land” on the basis that there is a significant possibility of significant harm. SGVs are described as representing “a combination of authoritative science tempered with policy judgments.” Their primary purpose is as “intervention values” in the regulatory framework for assessment of human health risks in relation to land-use. SGVs have now replaced the previous guidance known as “the ICRCL values.”

DEFRA has published a number of contaminated land advice notes (CLAN) (see <http://www.defra.gov.uk/environment/quality/land/contaminated/technical-guidance.htm>, last accessed in May 2010) which provides technical guidance on contaminated land.

Where there is not a specific SGV for a contaminant, then the EA advises that the guidance in the CLR package of documents (CLR7-10) can be used to assess the risks to human health from soil contamination. Where the exposure scenarios are different than those in CLR 10 then the advice is to conduct a detailed quantitative risk assessment and generate appropriate site specific assessment criteria using the UK CLEA software.

Contaminated Land Publications

The Government has developed an extensive set of publications on contaminated land, including guidance information, the results of various committee investigations and workshops, and other research. Additionally, there is a series of industry profiles that may be used to identify different types of contaminants associated with various industrial activities. The SGV publications and other information, including the legislation and the Circular, can be downloaded at <http://www.defra.gov.uk/environment/quality/land/contaminated/index.htm> and from <http://www.environment-agency.gov.uk/research/planning/33706.aspx> (last accessed in May 2010).

Property Transfer Legislation

For persons or companies engaged in the purchase or sale of a business or property there is no statutory legal requirement to undertake pre-transaction environmental investigations. Nor is there any legislation in effect that requires sellers of businesses or property to provide the potential buyer with any document or statement concerning the environmental condition of the property.

Because of the application of the doctrine of “Caveat Emptor,” it is not unusual for parties involved in property or business transactions to seek, by way of contract negotiations, to obtain warranties and indemnities and to receive environmental disclosures in respect of it. This practice has become even more important in light of the “sold with information” test in the contaminated land regime. If a person liable for contamination sells to another person and provides sufficient information for the buyer to make an informed judgment on the nature and extent of the contamination then the purchaser (if they knowingly permit the contamination post sale) steps into the shoes of the seller for the purposes of the legislation.

Reporting Obligations for Spills and Releases

It is perhaps surprising that environmental legislation in the UK does not generally contain a positive obligation to report a spill or release save where it constitutes a breach of an environmental permit. There will be permit requirements to provide data for many facilities which can highlight a spill or release.

Even if there is not a specific condition contained in the permit, as a practical matter, the timeliness of incident reporting will be an important consideration for industry. The EA’s Enforcement and Prosecution Policy considers the “attitude of the offender” in deciding whether or not to prosecute. Part of the assessment of “attitude” includes attitude to reporting. Failure to report in a timely manner is something that would undoubtedly be taken into account during sentencing in the event of a prosecution. It may also impact culpability if the failure to report “knowingly permits” pollution to occur.

Generally, there is no reporting obligation in the event that soil or groundwater contamination is identified during the course of conducting a sampling program independent of an accident or spill incident (e.g. Phase II sampling as part of due diligence). On the other hand, if the sampling was in response to a reportable accident or incident, the competent authorities may require transmittal of the results, in which case, they must be provided. They may also become publicly available under the EIR.

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Other Useful Information

List of Key Agencies

Note: The country code for Great Britain is 44.

Central Government Authorities

The following are headquarters or central office addresses:

Department for Environment, Food & Rural Affairs
Nobel House
17 Smith Square
London SW1P 3JR
Tel: 020 7238 6000 (switchboard)
<http://www.defra.gov.uk/> (last accessed in May 2010)

Environment Agency
Rio House
Waterside Drive
Aztec West
Almondsbury
Bristol BS32 4UD
Tel: 08708 506506
<http://www.environment-agency.gov.uk> (last accessed in May 2010)

Scottish Environmental Protection Agency
Erskine Court
Castle Business Park
Stirling FK9 4TR
Tel: 01786 457700
Fax: 01786 446885
<http://www.sepa.org.uk/> (last accessed in May 2010)

Health and Safety Executive
Redgrave Court
Merton Road
Bootle
Merseyside
L20 7HS
Tel: 0151 951 4000
<http://www.hse.gov.uk/> (last accessed in May 2010)

HSE Infoline (Monday to Friday, 8.00 am to 6.00 pm)
Tel: 0845 345 0055
Fax: 0845 408 9566
Email: hse.infoline@connaught.plc.uk

Sources of Regulatory Information

Copies of statutory instruments and related regulatory information can be obtained through the following:

- Office of Public Sector Information formerly Her Majesty's Stationery Office (HMSO) <http://www.opsi.gov.uk> on-line information (last accessed in May 2010);
- The Stationery Office (TSO) <http://www.tso.co.uk/bookshop> on-line ordering (last accessed in May 2010); telephone ordering (0870 242 2345);

There are two dedicated TSO bookshops:

TSO Scotland
26 Rutland Square
Edinburgh EH1 2B4
Tel: 0131 659 7020

TSO Ireland
16 Arthur Street
Belfast BT1 4GD
Tel: 02890 238451

There are additionally a number of TSO UK and Overseas Agents and Distributors whose details can be accessed via the TSO website:

- Health and Safety Executive Publications <http://www.hse.gov.uk/pubns>;

HSE Books
PO Box 1999
Sudbury
Suffolk CO10 2WA
Tel: 01787 881 165
Fax: 01787 313 995

HSE Information
Caerphilly Business Park
Caerphilly CF83 3GG
Tel: 0845 345 0055
Fax: 0845 408 9566

- Department of Environment Food and Rural Affairs (DEFRA) <http://www.defra.gov.uk>; and publications issued by DEFRA can be ordered as follows:

DEFRA Publications Sales
Admail
6000
London
SW1A 2XX
Tel: 08459 556000
Email: defra@cambertown.com

There are also three useful publications that provide regulatory information, with two covering environmental (Garners and Sweet & Maxwell), and the other health and safety (Croners). These references are noted as follows:

Introduction

Garner's Environmental Law
LexisNexis UK
Halsbury House
35 Chancery Lane
London
WC2A 1EL
Tel: 020 7400 2500
Fax: 020 7400 2842

Garner's provides full-texts of statutory instruments involving environmental matters. The compendium is updated bi-monthly.

Sweet & Maxwell Encyclopaedia of Environmental Law
Sweet & Maxwell Limited
Cheriton House
PO Box 2000
Andover
SP10 9AH
Tel: 0845 600 9355
Fax: 020 7449 1144
Email: sweetandmaxwell.customer.services@thomson.com

Croner's Health and Safety at Work
Croner Publications Ltd (Publishers)
Croner House
145 London Road
Kingston upon Thames
Surrey KT2 6SR
Tel: 0208 547 3333
Fax: 0208 457 2637
Email: info@croner.co.uk

Croner's provides a summary only of health and safety-related legislation. The compendium is updated quarterly.

Lastly, EA and HSE provide various information through the internet.

The EA's home page is as follows: <http://www.environment-agency.gov.uk> (last accessed in May 2010).

The Health and Safety Executive home page can be found at: <http://www.hse.gov.uk> (last accessed in May 2010).

Description and Organization of Protocol

Scope and Limitations

These protocols are limited to addressing only those national EH&S requirements that have site-specific application to day-to-day, land-based manufacturing operations. As a result, various EH&S-related legislation is specifically excluded from this discussion. For example, there is a substantial body of legislation that only applies to Government entities and not the private sector. Other legislation is focused on specific non-manufacturing industrial sectors (e.g., use of protected natural areas and forest lands; requirements related to agriculture). Such legislation is excluded from the scope of this protocol unless determined to be applicable. Finally, these protocols do not cover requirements that may be imposed specifically on mining activities, or off-shore and maritime-related activities.

Additional legislation that is not addressed in this protocol include regulations that relate to “upstream activities” such as the sourcing of raw materials and their transport to the plant site, or “downstream” activities such as the delivery of products or intermediates to the end user or end user disposal. Finally, legislation related to product specifications, product registrations, licensing or marketing are excluded from the scope of this protocol.

The information presented herein is applicable and reasonably complete (relative to the scope limitations previously discussed) as of approximately 1 May 2010. A complete list of the various laws, regulations, and standards cited in this protocol document are provided in Appendix 1-A. This list is organized by protocol topic.

Organization

This EH&S audit protocol is organized around seventeen topics, with a separate section devoted to each. The protocol covers principal EH&S laws and regulations applicable to facilities located in Great Britain. Record keeping requirements that were previously copied and presented in a single section (former Section 19) are now prominently identified within the individual protocol sections. The specific topics covered are as follows:

Section 2 – General Environmental

Section 3 – Air Emissions

Section 4 – Solid and Hazardous Waste

Section 5 – Water Resources

Section 6 – Above and Below Ground Tank Management

Section 7 – Community Noise

Section 8 – PCBs

Section 9 – Asbestos

Section 10 – General Health and Safety

Section 11 – Equipment, Machine and Electrical Safety

Section 12 – Material Handling and General In-Plant Safety

Section 13 – Fire Safety

Section 14 – Transport of Dangerous Goods

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Section 15 – Industrial Hygiene

Section 16 – Chemical Management

Section 17 – Construction Work Site Safety

Section 18 – EH&S Training

Each protocol section begins with a summary description of the various regulations covered and is followed by the body of the protocol itself which contains a series of questions relating to the applicable legislation. Important clarifying information is often furnished either as “Notes” to a particular question or in an accompanying table or appendix.

Appropriate legislative references are provided for each protocol question presented.

There is a very substantial body of advisory literature, particularly in the area of health and safety. This literature includes guidance notes, approved codes of practice, general informational booklets, and British Standards. While certain advisory literature has been used in the development of the health and safety protocol sections, the scope and breadth of the available information goes well beyond what could be incorporated in an EH&S audit protocol, particularly in view of the facility and operational-specific nature of the available literature. Readers may wish to contact the HSE or the British Standards Institution for further information. The HSE contact was previously provided. The Head Office of the British Standards Institution is:

389 Chiswick High Road

London W4 4AL

Tel: 020 8996 9001

Fax: 020 8996 7001

<http://www.bsigroup.com/> (last accessed in May 2010)

Email: cservices@bsigroup.com

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<http://www.hammonds.com>

Resources

Table 1-1
List of Political Subdivisions

England**Counties**

Buckinghamshire	Gloucestershire	Northamptonshire	Tyne and Wear
Cambridgeshire	Hampshire	North Yorkshire	Warwickshire
Cumbria	Hertfordshire	Nottinghamshire	West Midlands
Derbyshire	Kent	Oxfordshire	West Sussex
Devon	Lancashire	Somerset	West Yorkshire
Dorset	Leicestershire	South Yorkshire	Worcestershire
East Sussex	Lincolnshire	Staffordshire	
Essex	Merseyside	Suffolk	
Greater Manchester	Norfolk	Surrey	

Unitary Authorities

Bath and North East Somerset	Durham	North Lincolnshire	Southampton
Bedford	East Riding of Yorkshire	North East Lincolnshire	Southend-on-Sea
Central Bedfordshire	Halton	North Somerset	Stockton-on-Tees
Blackburn with Darwen	Hartlepool	Nottingham	Stoke-on-Trent
Blackpool	County of Herefordshire	Peterborough	Swindon
Bournemouth	Isles of Scilly	Plymouth	Telford and Wrekin
Bracknell Forest	Isle of Wight	Poole	Thurrock
Brighton and Hove	City of Kingston upon Hull	Portsmouth	Torbay
City of Bristol	Leicester	Reading	Warrington
Cheshire East	Luton	Redcar and Cleveland	West Berkshire
Cheshire West and Chester	Medway	Rutland	Wiltshire
Cornwall	Middlesbrough	Shropshire	Windsor and Maidenhead
Darlington	Milton Keynes	Slough	Wokingham
Derby	Northumberland	South Gloucestershire	York

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Scotland

Councils Areas

Aberdeen City	East Lothian	Midlothian	South Ayrshire
Aberdeenshire	East Renfrewshire	Moray	South Lanarkshire
Angus	Edinburgh, City of	North Ayrshire	Stirling
Argyll and Bute	Eilean Siar	North Lanarkshire	West Dunbartonshire
Clackmannanshire	Falkirk	Orkney Islands	West Lothian
Dumfries and Galloway	Fife	Perth and Kinross	
Dundee City	Glasgow City	Renfrewshire	
East Ayrshire	Highland	Scottish Borders	
East Dunbartonshire	Inverclyde	Shetland Islands	

Wales (Counties)

Blaenau Gwent	Flintshire	Powys
Bridgend	Gwynedd	Rhondda Cynon Taff
Caerphilly	Isle of Anglesey	Swansea
Cardiff	Merthyr Tydfil	The Vale of Glamorgan
Carmarthenshire	Monmouthshire	Torlaen
Ceredigion	Neath Port Talbot	Wrexham
Conwy	Newport	
Denbighshire	Pembrokeshire	

2.0 GENERAL ENVIRONMENTAL

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

- I. Prescribed Premises [2-3](#)
- II. Environmental Impact Assessment Requirement..... [2-4](#)
- III. Environmental Audits [2-5](#)
- IV. Manufacturing Activities [2-6](#)

Tables or Appendices referenced in the protocol are located at the end of this section, along with a link to our audit scorecard, entitled [Audit Quick Check](#). This protocol applies to facilities located throughout Malaysia.

Key Legislation and Regulations

Key legislation and regulations covered in this protocol are noted as follows:

- **Environmental Quality Act, 1974, Act 127, last amended by Act A1315 of 2007, 1974 as amended through 2007.** This Act relates to the prevention, abatement, and control of pollution and enhancement of the environment. The portions of the Act relating to licensing requirements are addressed in this protocol section. The last amendment by the *Environmental Quality (Amendment) Act* took effect on August 30, 2007.
- **Industrial Co-Ordination Act, 1975, Act 156, last amended by P.U. (A) 373/00, 1975 as amended through 2000.** This Act provides for the co-ordination and orderly development of manufacturing activities in Malaysia, and for the establishment of an Industrial Advisory Council. The last amendment took effect on October 15, 2000.

- **Industrial Co-Ordination Rules, 1976, P.U. (A) 135/1976, last amended by P.U. (A) 153/08, 1976 as amended through 2008.** These Rules, promulgated under the Industrial Co-Ordination Act, 1975, revised in 1998 and last amended by the *Industrial Co-ordination (Amendment) Rules 2008*, set forth the fee schedule and other specifics for manufacturing facilities licensed under the Act. The last amendment took effect on June 1, 2008.
- **Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 1987, P.U. (A) 362/87, last amended by P.U. (A) 489/00, 1987 as amended through 2000.** This Order specifies the types of proposed activities or land use for which an environmental impact assessment must be conducted. The last amendment took effect on December 29, 2000.

Guidelines and Codes of Practice

Notes: The guidelines listed below are not regulation or law. They are intended to assist facilities in ensuring the health and safety of their employees and should be used in conjunction with, rather than in lieu of, the above legislation. However, as compliance with guidelines may be considered a defense against prosecution, it is recommended that facilities strongly consider complying with the applicable guidelines, including those listed below.

- **Environmental Impact Assessment Guidelines for Risk Assessment, December 2004, December 2004.** These Guidelines are intended to assist facilities carrying out risk assessments as part of the environmental impact assessment process.

This protocol section updates information contained in the prior version (2008). Specific additions, deletions, and other changes made relative to this earlier version of the protocol are summarized in Appendix 2-A.

Topics and Questions

I. Prescribed Premises

Notes: The term "prescribed premises" is used in the [Environmental Quality Act, 1974](#) and in many of the regulations and orders promulgated under the [Environmental Quality Act, 1974](#). The term refers to premises that may be, or may in the future be, subject to specific obligations. A list of current "prescribed activities" can be found in Table [2-1](#). [\[Environmental Quality Act, 1974, Section 2\]](#)

2.1 Has the facility obtained a license to operate from the Director-General of the Department of Environment if the facility, or part of the facility, conducts any of the following operations: [\[Environmental Quality Act, 1974, Section 18\]](#)

- Prescribed activities listed in Table [2-1](#); or
- Emission or discharge of substances in contravention of the acceptable conditions specified in the [Environmental Quality Act, 1974](#) and/or its regulations?

2.2 If the facility is not currently classified as having prescribed premises under any law or regulation, does it ensure that it does not perform any of the following without first receiving the prior written permission of the Department of Environment: [\[Environmental Quality Act, 1974, Section 19\]](#)

- Conduct any work on the premises that would cause the premises to become prescribed premises (see Table [2-1](#)) under the [Environmental Quality Act, 1974](#) or any of its regulations, orders or rules; or
- Construct on land any building designed or used for a purpose that would cause the land or building to become prescribed premises (see Table [2-1](#)) under any law or regulation?

2.3 If the facility needs to conduct any work, building, erection, or alteration that will cause the premises to become prescribed premises (see Table [2-1](#)) under the [Environmental Quality Act, 1974](#) or any of its regulations, orders or rules, has the facility submitted the following to the Department of Environment for review: [\[Environmental Quality Act, 1974, Section 20\]](#)

- The plans and specifications of the proposed work, building, erection or alteration together with details of the control equipment, if any, to be installed;

- A lay-out plan indicating the site of the proposed work, building, erection or alteration which will take place in relation to the surrounding areas;
- The details of the trade, industry, or process proposed to be conducted on the premises;
- Descriptions of waste constituents and characteristics; and
- Any other information requested by the Department of Environment?

Notes: The Department of Environment will not approve an application unless the applicant has already obtained planning approval from the competent planning authority. [\[Environmental Quality Act, 1974, Section 20\(2\)\]](#)

II. Environmental Impact Assessment Requirement

2.4 If the facility proposes to conduct any of the prescribed activities listed in Table [2-1](#), has it provided a report that contains the following information to the Department of Environment prior to commencing such activities: [\[Environmental Quality Act, 1974, Section 34A\]](#)

- An assessment of the impact the proposed activity will have, or is likely to have on the environment; and
- The proposed measures to be undertaken to prevent, reduce, or control any such adverse impacts on the environment?

Notes: In some cases, the facility may submit both a Preliminary Assessment Report and a Detailed Assessment Report. Guidance in preparing these reports may be found in Chapters 5 and 6 of *A Handbook of Environmental Impact Assessment Guidelines, August 1995*. The *Handbook of Environmental Impact Assessment Guidelines* was last amended in October 2007. This Handbook may be obtained by contacting the Department of Environment; see <http://www.doe.gov.my/en/content/contact-us-0> (last accessed in November 2010).

2.5 If the facility proposed to conduct any of the prescribed activities listed in Table [2-1](#), does it conduct a risk assessment in support of its environmental impact assessment, and are the findings of the risk assessment presented in a separate report? [\[Environmental Impact Assessment Guidelines for Risk Assessment, December 2004, Chapter 4\]](#)

Notes: The risk assessment report must stand on its own without referring to the environmental impact assessment report(s) (described in Question [2.4](#)), but the environmental impact assessment report(s) may incorporate the risk assessment. [\[Environmental Impact Assessment Guidelines for Risk Assessment, December 2004, Chapter 4\]](#)

2.6 If the facility received approval from the Department of Environment to conduct prescribed activities, does it comply with the conditions of the approved environmental impact assessment, and does it incorporate the proposed measures to prevent, reduce or control the adverse impact on the environment into the design, construction and operation of the prescribed activity? [\[Environmental Quality Act, 1974, Section 34A\]](#)

2.7 If the facility received approval from the DOE to conduct the prescribed activities, does it provide the DOE sufficient proof, as follows: [\[Environmental Quality Act, 1974, Section 34A\]](#)

- Proof of compliance with the conditions attached to the report (if any); and
- Proof that proposed measures to be taken to prevent, reduce or control the adverse impact on the environment are being incorporated into the design, construction and operation of the prescribed activity?

Notes: The [Environmental Quality Act, 1974](#) does not specify the type or frequency of the proof that must be submitted to DOE.

III. Environmental Audits

2.8 If the Department of Environment has required the facility to conduct an environmental audit, has the facility performed the following: [\[Environmental Quality Act, 1974, Section 33A\]](#)

- Appointed qualified personnel, registered with the Department of Environment, to conduct the audit;
- Conducted the environmental audit; and
- Submitted an audit report to the Department of Environment in the manner prescribed by the Department of Environment?

IV. Manufacturing Activities

Notes: The term "manufacturing activity" as used in the *Industrial Co-ordination Act, 1975* means the making, altering, blending, ornamenting, finishing, or otherwise treating or adapting any article or substance with a view to its use, sale, transport, delivery or disposal, and includes the assembly of parts and ship repairing but does not include any activity normally associated with retail or wholesale trade. [[*Industrial Co-Ordination Act, 1975, Section 2*](#)]

- 2.9** If the facility conducts any manufacturing activities, has it obtained a license to do so from the public officer appointed by the Prime Minister to issue such licenses? [[*Industrial Co-Ordination Act, 1975, Section 3*](#)]

Notes: A single application for a license may be made for one or more products manufactured in one or more places of manufacturing activity. However, a separate license will be issued for each place of manufacturing activity. [[*Industrial Co-Ordination Act, 1975, Section 4*](#)]

- 2.10** If the facility has received a manufacturing license, does it prominently display the license (or a certified true copy thereof) in the place of manufacturing activity? [[*Industrial Co-Ordination Rules, 1976, Rule 5*](#)]

Table 2-1**Prescribed Activities Requiring a Report on Impact on the Environment**

Prescribed Activities that Require an Environmental Impact Assessment	
1.	Agriculture - Land development schemes covering an area of 500 hectares or more to bring forest land into agricultural production. - Agricultural programs necessitating the resettlement of 100 families or more. - Development of agricultural estates covering an area of 500 hectares or more involving changes in types of agricultural use.
2.	Airport - Construction of airports having an airstrip of 2,500 meters or longer. - Airstrip development in state and national parks.
3.	Drainage and Irrigation - Construction of dams and man-made lakes and artificial enlargement of lakes with surface areas of 200 hectares or more. - Drainage of wetland, wild-life habitat or of virgin forest covering an area of 100 hectares or more. - Irrigation schemes covering an area of 5,000 hectares or more.
4.	Land Reclamation - Coastal reclamation involving an area of 50 hectares or more.
5.	Fisheries - Construction of fishing harbors. - Harbor expansion involving an increase of 50 percent or more in fish landing capacity per annum. - Land-based aquaculture projects accompanied by clearing of mangrove swamp forests covering an area of 50 hectares or more.

Prescribed Activities that Require an Environmental Impact Assessment

6. Forestry

- Conversion of hill forest land to other land use covering an area of 50 hectares or more.
- Logging or conversion of forest land to other land use within the catchment area of reservoirs used for municipal water supply, irrigation or hydro-power generation or in areas adjacent to state and national marine parks.
- Logging covering an area of 500 hectares or more.
- Conversion of mangrove swamps for industrial, housing, or agricultural use covering an area of 50 hectares or more.
- Clearing of mangrove swamps on islands adjacent to national marine parks.

7. Housing

- Housing development covering an area of 50 hectares or more.

8. Industry

- Chemical - Where production capacity of each product or of combined products is greater than 100 tonnes/day.
- Petrochemical - All Sizes.
- Non-Ferrous - Primary Smelting:
Aluminum, all sizes;
Copper, all sizes; and
Others producing 50 tonnes/day or more of product.
- Non-Metallic - Cement - for clinker throughput of 30 tonnes/hour or more, and
Lime - 100 tonnes/day and more burnt lime rotary kiln or 50 tonnes/day or more vertical kiln.
- Iron and Steel - Require iron ore as raw materials for production greater than 100 tonnes/day; or
Using scrap iron as raw material for production greater than 200 tonnes/day.
- Shipyards - Dead Weight Tonnage greater than 5,000 tonnes.
- Pulp and Paper - Production capacity greater than 50 tonnes/day.

Prescribed Activities that Require an Environmental Impact Assessment**9. Infrastructure**

- Construction of hospitals with outfall into beachfronts used for recreational purposes.
- Industrial estate development for medium and heavy industries covering an area of 50 hectares or more.
- Construction of expressways.
- Construction of national highways.
- Construction of new townships.

10. Ports

- Construction of ports.
- Port expansion involving an increase of 50% or more in handling per annum.

11. Mining

- Mining of minerals in new areas where the mining lease covers a total area in excess of 250 hectares.
- Ore processing, including concentrating for aluminum, copper, gold or tantalum.
- Sand dredging involving an area of 50 hectares or more.

12. Petroleum

- Oil and gas fields development.
- Construction of offshore and on-shore pipelines in excess of 50 kilometers in length.
- Construction of oil and gas separation, processing, handling, and storage facilities.
- Construction of oil refineries.
- Construction of product depots for the storage of petrol, gas, or diesel (excluding service stations) which are located within 3 kilometers of any commercial, industrial, or residential areas and which have a combined storage capacity of 60,000 barrels or more.

13. Power Generation and Transmission

- Construction of steam generated power stations burning fossil fuels and having a capacity of more than ten megawatts.
- Dams and hydro-electric power schemes with either or both of the following:
 - a. Dams over 15 meters high and ancillary structures covering a total area in excess of 40 hectares;
 - b. Reservoirs with a surface area in excess of 400 hectares.
- Construction of combined cycle power stations.
- Construction of nuclear-fueled power stations.

Prescribed Activities that Require an Environmental Impact Assessment

14. Quarries

- | |
|--|
| <ul style="list-style-type: none"> - Proposed quarrying of aggregate, limestone, silica, quartzite, sandstone, marble and decorative building stone within three kilometers of any existing residential, commercial or industrial areas, or any area for which a license, permit or approval has been granted for residential, commercial, or industrial development. |
|--|

15. Railways

- | |
|--|
| <ul style="list-style-type: none"> - Construction of new routes. - Construction of branch lines. |
|--|

16. Transportation

- | |
|--|
| <ul style="list-style-type: none"> - Construction of Mass Rapid Transport projects. |
|--|

17. Resort and Recreational Development

- | |
|---|
| <ul style="list-style-type: none"> - Construction of coastal resort facilities or hotels with more than 80 rooms. - Hill station resort or hotel development covering an area of 50 hectares or more. - Development of tourist or recreational facilities in national parks. - Development of tourist or recreational facilities on islands in surrounding waters that are gazetted as national marine parks. |
|---|

18. Waste Treatment and Disposal

- | |
|---|
| <ul style="list-style-type: none"> - Toxic and Hazardous Waste: <ul style="list-style-type: none"> a. Construction of incineration plant. b. Construction of recovery plant (off-site). c. Construction of wastewater treatment plant (off-site). d. Construction of secure landfill facility. e. Construction of storage facility (off-site). - Municipal Solid Waste: <ul style="list-style-type: none"> a. Construction of incineration plant. b. Construction of composting plant. c. Construction of recovery/recycling plant. d. Construction of municipal solid waste landfill facility. - Municipal Sewage: <ul style="list-style-type: none"> a. Construction of wastewater treatment plant. b. Construction of marine outfall. |
|---|

Prescribed Activities that Require an Environmental Impact Assessment**19. Water Supply**

- Construction of dams or impounding reservoirs with a surface area of 200 hectares or more.
- Groundwater development for industrial, agricultural, or urban water supply of greater than 4,500 cubic meters per day.

Source: Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 1987, Schedule.

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is provided for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter format does not contain the electronic links and other functionality contained in the MS Word version. The following instructions pertain to the fully linked Word version of the AQC.

Each question from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, electronic links back to the original protocol document are provided for quick access to this information when needed. To return to where you were in the AQC after following a link, use the back arrow located on the Audit Quick Check Toolbar.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X's to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

Additional audit questions can be added to the end of the AQC. Examples might include corporate requirements or best management practices. To add more questions, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Continue to sequentially number the questions by putting your cursor in the first column and typing the desired number.

Please Note: Additional rows will be included in the sort function. It is important that you number the questions for the sort functions to work. Please consider the following sort rules when entering custom text.

Sorting Responses

The AQC sort feature is accessed from the IAPC menu item located on the far right on the Main MS Toolbar. Please note the following criteria to take full advantage of this feature.

You can change the column titles as you see fit, but the menus assume that:

- the first column contains the question number and question text;
- the second column is "Not Applicable" (N/A) entries;
- the third column is "Complies" entries; and
- the fourth column is "Does Not Comply" entries.

A question is considered "Complies" if there is any text ("X" or "YES", for instance) in the "Complies" column.

A question is considered "Incomplete" if columns 2 to 4 are all empty.

Only one column should contain a value for any given question.

Click the IAPC menu item and then select one of the following menu choices:

Sort by Question Number

- Sorts the section by question number

Sort with Incomplete first

- Sorts the section with Incomplete first, Does Not Comply next, Complies next, then N/A

Sort with Non-compliant first

- Sorts the section with Does Not Comply first, Complies next, N/A next, then Incomplete

Sort with Compliant first

- Sort the section with Complies items first, Does Not Comply next, N/A next, then Incomplete

Sort with Not Applicable last

- Sort the section with not-applicable items last (Complies first, Does Not Comply next, Incomplete next, then N/A)

For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click the IAPC menu item and choose "Sort with Non-compliant first". Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

Once the completed AQC is sorted, save or print a copy of the results. The AQC can then be re-sorted using a different option.

SECTION 2.0 GENERAL ENVIRONMENTAL

AUDIT QUICK CHECK

SITE: _____ DATE: _____
 ASSESSOR: _____

	Not Applicable	Complies	Does Not Comply
Q2.1 Has the facility obtained a license to operate from the Director-General of the Department of Environment if the facility, or part of the facility, conducts any of the following operations: [<i>Environmental Quality Act, 1974, Section 18</i>] – Prescribed activities listed in Table 2-1; or – Emission or discharge of substances in contravention of the acceptable conditions specified in the <i>Environmental Quality Act, 1974</i> and/or its regulations? I. Prescribed Premises Comments:			

	Not Applicable	Complies	Does Not Comply
Q2.2 If the facility is not currently classified as having prescribed premises under any law or regulation, does it ensure that it does not perform any of the following without first receiving the prior written permission of the Department of Environment: [<i>Environmental Quality Act, 1974, Section 19</i>] – Conduct any work on the premises that would cause the premises to become prescribed premises (see Table 2-1) under the <i>Environmental Quality Act, 1974</i> or any of its regulations, orders or rules; or – Construct on land any building designed or used for a purpose that would cause the land or building to become prescribed premises (see Table 2-1) under any law or regulation? I. Prescribed Premises Comments:			

	Not Applicable	Complies	Does Not Comply
Q2.3 If the facility needs to conduct any work, building, erection, or alteration that will cause the premises to become prescribed premises (see Table 2-1) under the <i>Environmental Quality Act, 1974</i> or any of its regulations, orders or rules, has the facility submitted the following to the Department of Environment for review: [<i>Environmental Quality Act, 1974, Section 20</i>] – The plans and specifications of the proposed work, building, erection or alteration together with details of the control equipment, if any, to be installed; – A lay-out plan indicating the site of the proposed work, building, erection or alteration which will take place in relation to the surrounding areas; – The details of the trade, industry, or process proposed to be conducted on the premises; – Descriptions of waste constituents and characteristics; and – Any other information requested by the Department of Environment? See protocol for notes. I. Prescribed Premises Comments:			

	Not Applicable	Complies	Does Not Comply
Q2.4 If the facility proposes to conduct any of the prescribed activities listed in Table 2-1, has it provided a report that contains the following information to the Department of Environment prior to commencing such activities: [<i>Environmental Quality Act, 1974, Section 34A</i>] – An assessment of the impact the proposed activity will have, or is likely to have on the environment; and – The proposed measures to be undertaken to prevent, reduce, or control any such adverse impacts on the environment? See protocol for notes. II. Environmental Impact Assessment Requirement Comments:			
Q2.5 If the facility proposed to conduct any of the prescribed activities listed in Table 2-1, does it conduct a risk assessment in support of its environmental impact assessment, and are the findings of the risk assessment presented in a separate report? [<i>Environmental Impact Assessment Guidelines for Risk Assessment, December 2004, Chapter 4</i>] See protocol for notes. II. Environmental Impact Assessment Requirement Comments:			

	Not Applicable	Complies	Does Not Comply
Q2.6 If the facility received approval from the Department of Environment to conduct prescribed activities, does it comply with the conditions of the approved environmental impact assessment, and does it incorporate the proposed measures to prevent, reduce or control the adverse impact on the environment into the design, construction and operation of the prescribed activity? [<i>Environmental Quality Act, 1974, Section 34A</i>] II. Environmental Impact Assessment Requirement Comments:			
Q2.7 If the facility received approval from the DOE to conduct the prescribed activities, does it provide the DOE sufficient proof, as follows: [<i>Environmental Quality Act, 1974, Section 34A</i>] – Proof of compliance with the conditions attached to the report (if any); and – Proof that proposed measures to be taken to prevent, reduce or control the adverse impact on the environment are being incorporated into the design, construction and operation of the prescribed activity? See protocol for notes. II. Environmental Impact Assessment Requirement Comments:			

	Not Applicable	Complies	Does Not Comply
Q2.8 If the Department of Environment has required the facility to conduct an environmental audit, has the facility performed the following: [<i>Environmental Quality Act, 1974, Section 33A</i>] – Appointed qualified personnel, registered with the Department of Environment, to conduct the audit; – Conducted the environmental audit; and – Submitted an audit report to the Department of Environment in the manner prescribed by the Department of Environment? III. Environmental Audits Comments:			
Q2.9 If the facility conducts any manufacturing activities, has it obtained a license to do so from the public officer appointed by the Prime Minister to issue such licenses? [<i>Industrial Co-Ordination Act, 1975, Section 3</i>] See protocol for notes. IV. Manufacturing Activities Comments:			
Q2.10 If the facility has received a manufacturing license, does it prominently display the license (or a certified true copy thereof) in the place of manufacturing activity? [<i>Industrial Co-Ordination Rules, 1976, Rule 5</i>] IV. Manufacturing Activities Comments:			

3.0 AIR EMISSIONS

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

- I. Authorizations 3-8
- II. Emissions Monitoring 3-9
- III. Emission Controls - General.....3-10
- IV. Combustion Equipment - Federal 3-10
- V. Chemical Recovery Process of Pulp Manufacturing Plants.....3-14
- VI. VOC Emissions from Automotive Coating Operations 3-15
- VII. Oil Refineries - VOC and Sulfur Recovery Requirements 3-18
- VIII. Sulfuric Acid Manufacturing Facilities.....3-20
- IX. Dodecylbenzenesulfonic Acid Manufacturing Plants 3-22
- X. Glass Manufacturing Processes.....3-22
- XI. Cement Manufacturing Operations 3-24
- XII. Desulfurizing Plants 3-25
- XIII. Waste Incineration Requirements - Emission Levels.....3-29
- XIV. Gas Station Vapor Recovery Systems in Mexico Valley 3-32
- XV. Ozone Depleting Substances - Montreal Protocol.....3-34
- XVI. General Record Keeping/Reporting - Fixed and Mobile Sources 3-36

Tables or Appendices referenced in the protocol are located at the end of this section, along with a link to our audit scorecard, entitled [Audit Quick Check](#). This protocol applies to facilities located throughout Mexico.

A. KEY LEGISLATION AND REGULATIONS

Key legislation and regulations covered in this protocol are noted as follows:

- **General Law on Ecological Balance and Environmental Protection (Ley General del Equilibrio Ecológico y la Protección al Ambiente)**, *published in the D.O.F. on January 28, 1988; last amended on May 16, 2008*. This Federal Law provides the regulatory framework for the protection, preservation, restoration and improvement of the environment, soil, water, air, biodiversity, and natural protected areas. It also includes general provisions regulating the environmental impact caused by high-risk activities, hazardous materials, hazardous wastes, noise emissions, vibrations, and activities affecting Mexican ecosystems. The amendments encourage self-regulation, clarify standards of compliance, and simplify the administrative process.
- **Regulation to the General Law on Ecological Balance and Environmental Protection for the Prevention and Control of Atmospheric Pollution (Reglamento de la Ley General Del Equilibrio Ecológico y la Protección Al Ambiente en Materia de Prevención y Control de la Contaminación de la Atmósfera)**, *published in the D.O.F. on November 25, 1988; last amended on June 3, 2004*. This Regulation contains the rules, criteria, and measures for the prevention and control of atmospheric pollution. It classifies stationary and mobile sources that can pollute the atmosphere. It also sets forth the air emissions obligations for stationary sources such as obtaining an operating license, compliance with the maximum allowable parameters of pollutants to the atmosphere, record keeping, periodic reporting, and monitoring of their pollutant emissions to the atmosphere.
- **Montreal Protocol on Substances that Deplete the Ozone Layer (Protocolo de Montreal Relativo a Sustancias Agotadoras de la Capa de Ozono)**, *entered into force on January 1, 1989 and published in the D.O.F. on February 12, 1990*. Mexico is a Party to the [*Montreal Protocol*](#). This Protocol establishes obligations for the parties to reduce the use of substances that deplete the ozone layer and provides the lists of these substances.

Notes: The *Decree to Adopt the Beijing Amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer* was published in the D.O.F. on October 26, 2007, and includes an annexed Spanish language version of the *Beijing Amendment*.

- **NOM-039-SEMARNAT-1993, Maximum Allowable Levels of Sulfur Dioxide, Sulfur Trioxide, and Sulfuric Acid Mist from Sulfuric Acid Manufacturing Facilities (NOM-039-SEMARNAT-1993 Que Establece los Niveles Máximos Permisibles de Emisión a la Atmósfera de Bióxido y Trióxido de Azufre y Neblinas de Acido Sulfúrico, en Plantas Productoras de Acido Sulfúrico), published in the D.O.F. on October 22, 1993.** This NOM establishes the maximum allowable emissions of sulfur dioxide and sulfur trioxide from existing and new sulfuric acid manufacturing facilities. Emission limits for existing facilities are based on the facility location within an area defined as a Critical Zone.
- **NOM-043-SEMARNAT-1993, Maximum Allowable Levels of Solid Particles from Stationary Sources (NOM-043-SEMARNAT-1993 Que Establece los Niveles Máximos Permisibles de Emisión a la Atmósfera de Partículas Sólidas Provenientes de Fuentes Fijas), published in the D.O.F. on October 22, 1993.** This NOM establishes the maximum allowable levels of emissions of solid particles from stationary sources. Emission limits are determined based on the location of the facility and emissions source.
- **NOM-046-SEMARNAT-1993, Maximum Allowable Levels of Sulfur Dioxide, Sulfur Trioxide, and Sulfuric Acid Mist from Stationary Source Dodecylbenzenesulfonic Acid Manufacturing Facilities (NOM-046-SEMARNAT-1993 Que Establece Niveles Máximos Permisibles de Emisión a la Atmósfera de Bióxido de Azufre, Neblinas de Trióxido de Azufre y Acido Sulfúrico Provenientes de Procesos de Producción de Ácidos Dodecylbencensulfonico en Fuentes Fijas), published in the D.O.F. on October 22, 1993.** This NOM establishes the maximum allowable emissions of sulfur dioxide, sulfur trioxide and sulfuric acid mists from existing and new stationary source dodecylbenzenesulfonic acid manufacturing facilities.
- **Agreement by which the Nomenclature of 58 Official Mexican NOMs is Changed (Acuerdo Mediante el Cual se Reforma la Nomenclatura de 58 Normas Oficiales Mexicanas), published in the D.O.F. on November 24, 1994.** This Agreement adopts a number of NOMs related to air measurement procedures for specific pollutants, and rennumbers these NOMs using a new numbering system.
- **NOM-085-SEMARNAT-1994, Atmospheric Pollution - Stationary Sources (NOM-085-SEMARNAT-1994 Contaminación Atmosférica-Fuentes Fijas), published in the D.O.F. on December 2, 1994; last amended on November 11, 1997.** This NOM establishes the maximum allowable levels of emissions to the atmosphere of fumes, total suspended particles, sulfur dioxide, and nitrogen oxides from stationary sources that combust solid, liquid or gaseous fuels, as well as the maximum allowable levels of sulfur dioxide emission from direct heating equipment.

- **NOM-092-SEMARNAT-1995, Gasoline Vapor Recovery Systems at Service and Self-Service Stations located in the Mexico Valley (NOM-092-SEMARNAT-1995 Que Regula la Contaminación Atmosférica y Establece los Requisitos, Especificaciones y Parámetros para la instalación de Sistemas de Recuperación de Vapores de Gasolina en Estaciones de Servicio y de Autoconsumo Ubicadas en el Valle de México), published in the D.O.F. on September 6, 1995.** This NOM regulates air pollution and establishes the requirements, specifications and parameters for the installation of gasoline vapor recovery systems at service and self-service stations located in the Mexico Valley.
- **NOM-093-SEMARNAT-1995, Gasoline Vapor Recovery Systems at Service and Self-Service Stations (NOM-093-SEMARNAT-1995 Que Establece el Método de Prueba para Determinar la Eficiencia de Laboratorio de los Sistemas de Recuperación de Vapores de Gasolina en Estaciones de Servicio y de Autoconsumo), published in the D.O.F. on September 6, 1995.** This NOM regulates the testing method to determine the laboratory efficiency of gasoline vapor recovery systems at service and self-service stations.
- **NOM-075-SEMARNAT-1995, Maximum Allowable Permissible Limits of Emission into the Atmosphere of Volatile Organic Compounds from Oil Water Separators in Petroleum Refineries (NOM-075-SEMARNAT-1995 Que Establece los Niveles Máximos Permisibles de Emisión a la Atmósfera de Compuestos Orgánicos Volátiles Provenientes del Proceso de los Separadores Agua-Aceite de las Refinerías del Petróleo), published in the D.O.F. on December 26, 1995.** This NOM establishes the maximum permissible limits of emission into the atmosphere of volatile organic compounds (VOCs) generated by oil-water separators in oil refineries.
- **NOM-097-SEMARNAT-1995, Maximum Allowable Levels of Air Emissions of Particulate Materials and Nitrogen Oxide from the Glass Manufacturing Process (NOM-097-SEMARNAT-1995 Que Establece los Límites Máximos Permisibles de Emisión a la Atmósfera de Material Particulado y Óxidos de Nitrógeno en los Procesos de Fabricación de Vidrio en el País), published in the D.O.F. on February 1, 1996.** This NOM establishes the maximum allowable levels of emissions of particulates and nitrogen oxide from the glass manufacturing industry.
- **NOM-105-SEMARNAT-1996, Maximum Allowable Levels of Atmospheric Emissions of Total Solid Particles and Total Sulfur Compounds Derived from the Chemical Recovery Processes of Pulp Manufacturing Plants (NOM-105-SEMARNAT-1996 Que Establece los Niveles Máximos Permisibles de Emisiones a la Atmósfera de Partículas Sólidas Totales y Compuestos de Azufre Reducido Total Provenientes de los Procesos de Recuperación de Químicos de las Plantas de Fabricación de Celulosa), published in the D.O.F. on April 2, 1998.** This NOM establishes the maximum allowable levels of atmospheric emission of total solid particles and total sulfur compounds derived from the chemical recovery processes of pulp manufacturing plants.

- **NOM-121-SEMARNAT-1997, Volatile Organic Compounds (VOCs) Emissions from Car Coatings (NOM-121-SEMARNAT-1997 Que Establece el Contenido Máximo Permisible de Compuestos Orgánicos Volátiles (COVs), Provenientes de las Operaciones de Recubrimiento de Carrocerías Nuevas en Planta de Automóviles, Unidades de Uso Múltiple, de Pasajeros, y Utilitarios; Carga y Camiones Ligeros, así como el Método para Calcular sus Emisiones.), published in the D.O.F. on July 14, 1998.** This NOM establishes the maximum allowable limits of emissions to the atmosphere of volatile organic compounds (VOCs) from the operations of in-plant coating of new bodies of automobiles, multiple-use passenger and utility vehicles, cargo and light-duty trucks. This NOM establishes the method for calculating the emissions.
- **NOM-047-SEMARNAT-1999, Monitoring/Testing Equipment and Procedures for Verifying the Emissions of Contaminants from Automotive Vehicles in Circulation that Use Gasoline, Liquid Petroleum Gas (LPG), Liquid Natural Gas (LNG), and Other Alternative Fuels (NOM-047-SEMARNAT-1999 Que establece las Características del Equipo y el Procedimiento de Medición para la Verificación de los Límites de Emisión de Contaminantes, Provenientes de los Vehículos Automotores en Circulación que Usan Gasolina, Gas Licuado de Petróleo, Gas Natural u otros Combustibles Alternos), published in the D.O.F. on May 10, 2000.** This NOM addresses requirements pertaining to the monitoring/testing equipment and procedures for verifying the emission of contaminants from automotive vehicles in circulation that use gasoline, liquid petroleum gas (LPG), liquid natural gas (LNG), and other alternative fuels.
- **NOM-040-SEMARNAT-2002, Maximum Allowable Levels of Air Emissions from the Manufacturing of Hydraulic Cement (NOM-040-SEMARNAT-2002 Protección Ambiental-Fabricación de Cemento Hidráulico-Niveles Máximos de Emisión a la Atmósfera), published in the D.O.F. on December 18, 2002; last amended on April 20, 2004.** This NOM specifies emissions limits for stationary sources involved in the manufacturing of hydraulic cement, which utilize conventional fuels or mixtures with other materials or wastes that are combustible/fuels in the manufacturing process.
- **NOM-137-SEMARNAT-2003, Atmospheric Contamination - Desulfurization Plants for Sour Gases and Condensates - Control of Sulfur Emissions (NOM-137-SEMARNAT-2003 Contaminación Atmosférica-Plantas Desulfuradoras de Gas y Condensados Amargos-Control de Emisiones de Compuestos de Azufre), published in the D.O.F. on May 30, 2003.** This NOM applies to any plants, used for desulfurization of sour gases and condensates and operating throughout the entire national territory, with the exception of those with a nominal capacity of less than 2 (metric) tons/day, those located on maritime platforms, as well as those used in petroleum refineries.

- **Decree Issuing the Regulation to the General Law on Ecological Balance and Environmental Protection Pertaining to the Register of Emissions and of Transfer of Contaminants and Adding and Amending the Regulation of the General Law on Ecological Balance and Environmental Protection for the Prevention and Control of Atmospheric Pollution (Decreto por el que se expide el Reglamento de la LGEEPA en materia de Registro de Emisiones y Transferencia de Contaminantes y se Adiciona y Reforma el Reglamento de la Ley General del Equilibrio Ecológico y la Protección al Ambiente en Materia de Prevención y Control de la Contaminación de la Atmósfera), published in the D.O.F. on June 3, 2004.** This Decree specifies additional details pertaining to the annual multi-media environmental reporting requirements for facilities (COA - Annual Operation Certificate) under the government's Register of Emissions and of Transfer of Contaminants, including the specific reportable chemicals that are emitted to the environment or that are transferred.
- **NOM-098-SEMARNAT-2002, Specifications for the Operation and Pollution Emission Limits of Waste Incineration Operations (NOM-098-SEMARNAT-2002 Protección Ambiental-Incineración de Residuos, Especificaciones de Operación y Límites de Emisión de Contaminantes), published in the D.O.F. on October 4, 2004.** This NOM establishes the specifications for the operation of and the maximum pollution emission limits of air pollutants for waste incineration facilities.
- **Agreement that the Requirements in Article 17, subpart II of the Air Regulation are to be Presented Using the Annual COA Form (Acuerdo por el que se Determina que la Obligación a que se Refiere el Artículo 17 Fracción II del Reglamento de la Ley General del Equilibrio Ecológico y la Protección al Ambiente en Materia de Prevención y Control de la Contaminación de la Atmósfera), published in the D.O.F. on November 3, 2005.** This Agreement addresses the specific requirement for facilities to submit the emissions inventory using the form for the multimedia COA ("Cedula de Operación Anual" - Annual Operation Certificate).
- **NOM-041-SEMARNAT-2006, Maximum Allowable Levels of Air Pollutants Resulting from the Emissions of Vehicles in Circulation that use Gasoline as Fuel (NOM-041-SEMARNAT-2006 Que Establece los Límites Máximos Permisibles de Emisión de Gases Contaminantes Provenientes del Escape de los Vehículos Automotores en Circulación que Usan Gasolina como Combustible), published in the D.O.F. on March 6, 2007.** This NOM addresses vehicle emission testing requirements for vehicles with gasoline powered combustion engines, and applies to all automotive vehicles that are in circulation, with the exception of automotive vehicles with a net weight ("peso bruto") of less than 400 kg, as well as motorcycles, agricultural tractors, and machinery dedicated to construction and mining.

- **Agreement through which the Public is Generally Informed of the Reduction Calendar/Schedule for the Consumption/Use and the Inventories of Chlorofluorocarbons in the United States of Mexico (Acuerdo mediante el cual se informa al público en general el calendario de reducción en el consumo y en los inventarios de cloroflourocarbonos en los Estados Unidos Mexicanos), published in the D.O.F. on March 26, 2007.** This Agreement informs the public of the reduction schedule for the use and the inventories of chlorofluorocarbons.
- **NOM-045-SEMARNAT-2006, Maximum Permissible Limits for Opacity, Procedure for Testing, and Technical Characteristics for Measurement Equipment for Vehicles in Circulation that Use Diesel as Fuel (NOM-045-SEMARNAT-2006 Protección Ambiental.- Vehículos en Circulación que usan Diesel como Combustible.- Límites Máximos Permisibles de Opacidad, Procedimiento de Prueba y Características Técnicas del Equipo de Medición), published in the D.O.F. March 28, 2007.** This NOM addresses maximum permissible limits for opacity, testing procedures, and technical characteristics for measurement equipment for vehicles in circulation that use diesel as fuel.
- **NOM-148-SEMARNAT-2006, Atmospheric Contamination - Recovery of Sulfur from Petroleum Refining Processes (NOM-148-SEMARNAT-2006 Contaminación Atmosférica - Recuperación de Azufre Proveniente de los Procesos de Refinación del Petróleo), published in D.O.F. on November 28, 2007.** This NOM addresses requirements concerning the recovery of sulfur at petroleum refineries.

This protocol section updates information contained in the prior version (2008). Specific additions, deletions, and other changes made relative to the earlier version of the protocol are summarized in Appendix 3-A.

B. TOPICS AND QUESTIONS

Notes: If the facility does not have any fixed emission sources that are subject to federal jurisdiction, as specifically addressed in this protocol section, it is probable that it is subject to municipal or State requirements associated with sources of emissions. Therefore, prior to conducting the audit, the auditor should check municipal and State regulations for requirements pertaining to air emissions.

NOM-086-SEMARNAT-SENER-SCFI-2005, Fossil Fuel Specifications with Regards to Environmental Protection establishes the environmental specifications with which any liquid or gaseous fossil fuels must comply. This NOM applies to all facilities that produce and import fossil fuels within the Mexican territory as of March 30, 2006. Although beyond the scope of this protocol, the auditor may wish to obtain a copy of this NOM for audits of these types of facilities. The NOM includes numerous tables addressing detailed technical specifications and parameters for the content and composition of different types of fuels such as gasoline, diesel, industrial fuels, and liquefied gas, among others. Throughout this protocol section, a “ton” is understood to mean a metric ton, corresponding to *Le Système International d'Unités* (SI) measurements, which was adopted by Mexico in 1992 with the ratification of the *Federal Law on Measurement and Standards*.

I. Authorizations

- 3.1** If the facility emits odors, gases, or solid or liquid particulate matter, has it obtained an operating license or a LAU/Unique Environmental License (see the Subsection entitled, “Environmental Operating Licenses, Unique Environmental Licenses, and Annual Environmental Reporting” in Section 2.0 of this protocol) issued by the Ministry of Environment and Natural Resources (“SEMARNAT”)? [\[Air Regulation, Articles 18 and 19\]](#)

Notes: This requirement applies to all industrial or commercial processes or operations, service operations, or activities that generate or may generate air emissions and that are fixed emission sources subject to federal jurisdiction. [\[Air Regulation, Article 17 and 17BIS\]](#)

Fixed emission sources subject to federal jurisdiction include the following industries: petroleum and petrochemical chemical; painting and ink; metallurgical; automotive; pulp and paper; cement and lime manufacturing; asbestos; glass; generation of electrical energy/power; and hazardous waste treatment. [\[General Law on Ecological Balance and Environmental Protection, Article 111-BIS\]](#); [\[Air Regulation, Article 17BIS\]](#) and [\[Decree Amending General Law, Second Article\]](#) A more detailed breakdown of the specific activities with each of the industries set forth in Article 17BIS to the [Air Regulation](#), which is available at: http://www.diputados.gob.mx/LeyesBiblio/regley/Reg_LGEEPA_MPCCA.pdf. This Article was amended by the Second Article of the [Decree Amending General Law](#), which is available at: http://www.semarnat.gob.mx/leyesynormas/Reglamentos%20del%20sector/REGLA_REGIST_EMIS_3_JUN_04.pdf. (Both websites were last accessed in February 2010.)

- 3.2** If the facility holds an operating license or LAU, does it meet all conditions established in the license, including emissions limitations? [[Air Regulation, Article 20](#)]
- 3.3** If the facility conducts open air burning, does it obtain authorization from SEMARNAT at least 10 days prior to conducting the burning? [[Air Regulation, Article 27](#)]

Notes: Open air burning is allowed by SEMARNAT only if it deems that the facility personnel are trained and qualified in fire fighting. [[Air Regulation, Article 27](#)]

II. Emissions Monitoring

- 3.4** If the facility has any fixed emission sources subject to federal jurisdiction (as addressed in the note to Question [3.1](#)), has it installed air emissions sampling ports and platforms? [[Air Regulation, Article 17, subpart III](#)]

Notes: The sampling ports and platforms must comply with the SEMARNAT document entitled, "*Measurement of Gases and Particulates in Stacks and Chimneys of Fixed Sources, Instructive for Monitoring Platforms and Ports (CCAT-FF-001)*." CCAT-FF-001 is available through the subscription service LegisMex (<http://uninet.mty.itesm.mx/legis/uso-leg.htm>, last accessed in February 2010).

- 3.5** Does the facility maintain the sampling ports and platforms in safe conditions? [[Air Regulation, Article 26](#)]

Notes: The term "safe" is not defined in the Regulation.

- 3.6** Does the facility calibrate the sampling measurement equipment that is installed on the sampling ports and platforms? [[Air Regulation, Article 26](#)]

- 3.7** Has the facility conducted perimeter monitoring for the contaminants in its emissions? [[Air Regulation, Article 17, subpart V](#)]

Notes: Perimeter monitoring is required only for facilities located in urban or suburban zones, adjacent to protected natural areas, or when the facility operations, raw materials, products or secondary products may cause serious damage to ecosystems (as judged by SEMARNAT). [[Air Regulation, Article 17, subpart V](#)]

The [Air Regulation](#) does not specify a minimum emissions level that would exclude a facility from this requirement; it is implied that SEMARNAT makes such determinations on a case-by-case basis.

- 3.8** Are the emission sampling and measurement methods used consistent with the specifications contained in the applicable NOMs? [[Air Regulation, Article 25](#)]

Notes: The air emission sampling/measurement NOMs are listed in Table [3-1](#).

III. Emission Controls - General

- 3.9** Do the facility's emissions enter the atmosphere only through ducts or stacks? [[Air Regulation, Article 23](#)]

Notes: If the facility's emissions are not emitted through ducts or stacks (i.e., fugitive emissions), the facility must submit a report to SEMARNAT providing the technical justification.

- 3.10** Are the emission ducts or stacks high enough to achieve adequate dispersion, as specified in the NOMs? [[Air Regulation, Article 24](#)]

Notes: This Regulation indicates that these emissions sources must be consistent with "corresponding technical standards." However, as of February 2010, NOMs establishing the dispersion requirements for these sources have not been identified. It is possible that such conditions may be specified in the facility's operating permit.

- 3.11** If the facility emits particulate matter, does it comply with the particulate emission standards set forth in Table [3-2](#)? [[NOM-043-SEMARNAT-1993, Article 5.2](#)]

IV. Combustion Equipment - Federal

Notes: This subsection applies to fixed emission sources that use solid, liquid or gaseous fuels, or any combination thereof, that specifically entail any indirect heating ("calentamiento indirecto") combustion equipment, as well as any equipment used for the generation of electricity that uses a combined cycle technology. It also applies to emissions of sulfur dioxide (only) in direct-contact heating ("calentamiento directo") combustion equipment. [[NOM-085-SEMARNAT-1994, Article 2, first paragraph](#)]

The following types of equipment are exempt from the requirements in this subsection: domestic equipment used for hot water heating, heating (i.e., climate control), and stoves and ovens used in residences, schools, hospitals, and recreational centers, as well as those used in personnel service areas of industrial facilities. However, the requirements in this subsection will apply to industrial, commercial and service-related establishments when the nominal capacity (defined below in this note) of the combustion equipment or services, either as an individual unit or as the sum of units, exceeds 10 cc ("caballos caldera"; for unit conversions see Annex 5, Equivalency Table, of [NOM-085-](#)

[SEMARNAT-1994](http://www.semarnat.gob.mx/leyesynormas/Normas%20Oficiales%20Mexicanas%20vigentes/NOM_085_DOE.pdf), available at http://www.semarnat.gob.mx/leyesynormas/Normas%20Oficiales%20Mexicanas%20vigentes/NOM_085_DOE.pdf; last accessed in February 2010). [[NOM-085-SEMARNAT-1994, Article 2, second paragraph](#)]

The following are also exempt from requirements in this subsection: industrial field burner equipment, regeneration systems for catalytic destruction plants, sulfur recovery plants, and direct-contact heating processes that produce sulfur dioxide in addition to that associated with the fuel content. [[NOM-085-SEMARNAT-1994, Article 2, third paragraph](#)]

Equations for calculating emissions and accompanying texts are provided in Articles 5 through 7 of [NOM-085-SEMARNAT-1994](#), available at the weblink provided above.

The following definitions are used in this subsection: [[NOM-085-SEMARNAT-1994, Article 4](#)]

- “Combined cycle” is the process for obtaining heat in two stages, included in the first stage the generation of combustion gases and their expansion and, in the second stage, the transfer and recovery of the heat for the purpose of generating electrical energy;
- “Continuous monitoring” is monitoring conducted with automatic equipment with a minimum of 15 measurements in a period of not less than 60 minutes and not more than 360 minutes. The result of the monitoring is the average of the period sampled;
- “Critical Zones” (“ZC - Zonas Críticas”) include the following:
 - Zona Fronteriza Norte;
 - Metropolitan zones of Monterrey and Guadalajara (ZMCG);
 - Population centers of: Coatzacoalcos-Minatitlán (municipalities of Coatzacoalcos, Minatitlán, Ixhuatlán del Sureste, Cosoleacaque and Nanchital) in the State of Veracruz;
 - Irapuato-Celaya-Salamanca (municipalities of Celaya, Irapuato, Salamanca and Villagrán), in the State of Guanajuato;
 - Tula-Vito-Aspasco (municipalities of Tula de Allende, Tepeji de Ocampo, Tlahuelilpan, Atitalaquia, Atotonilco de Tula, Tlaxcoapan and Apaxco) in the states of Hidalgo and of México;

- Industrial corridor of Tampico-Madero-Altamira (municipalities of Tampico, Altamira and Ciudad Madero) in the State of Tamaulipas; Municipality of Tijuana in the State of Baja California; and
- Municipality of Ciudad Juarez in the State of Chihuahua;
- “Direct-contact heating” is the transfer of heat by a flame, combustion gas, or both, by entering into contact with the parts of the process;
- “Fixed source” is the installation or complex of installations belonging to a single entity, located in a closed facility where industrial or commercial operations and processes are carried out, or where activities that generate or could generate emissions that could contaminate the atmosphere are carried out;
- “Hourly energy consumption” is the quantity of fuel used in one hour multiplied by the caloric value, which is expressed as MJ/h;
- “Indirect heating” is the transfer of heat by combustion gases that do not enter into direct contact with the parts of the process;
- “Liquid and gaseous combustible fossil fuels” are petroleum derivatives and natural gases such as light petroleum product, diesel, gas-oil, heavy oil, LPG, butane, propane, methane, isobutane, propylene, butylene, or any combinations thereof;
- “Nominal capacity” is the thermal potential of the design of a certain piece of equipment, as indicated by the manufacturer; and
- “Solid combustible fossil fuels” are varieties of mineral carbon with a fixed content of carbon that varies between 10% and 90% by weight, as well as petroleum coke.

SEMARNAT may exempt certain facilities from complying with the emissions limits specified below in this subsection, based on conditions such as the availability of certain fuel types and the location of the facility in a critical zone. Such an exception could permit the facility to comply with less restrictive emission limits. [[NOM-085-SEMARNAT-1994, November 11, 1997 modifications](#)]

3.12 If the facility has any fixed source combustion equipment with an hourly energy consumption that exceeds 43,000 MJ/h, does it demonstrate compliance with its total sulfur dioxide emission levels by obtaining emissions certifications for these emissions (assigned based on the regional levels set forth in Table [3-3](#))? [[NOM-085-SEMARNAT-1994, Article 5.3](#)]

- 3.13** If the facility operates any fixed source combustion equipment, does it ensure emissions do not exceed the maximum permissible limits for smoke, total suspended particulates, nitrogen oxide and sulfur dioxide specified in Table 3-4? [[NOM-085-SEMARNAT-1994, Articles 5.1](#)]

Notes: When two or more emissions stacks exist where the combustion equipment uses solid, liquid and/or gaseous fossil fuels, they are subject to the values specified in Table 3-4. Alternately, the emissions from these stacks can be weighted as a function of the thermal capacity of the equipment or of the various pieces of equipment, through the application of Equation 1 in [NOM-085-SEMARNAT-1994](#) (see http://www.semarnat.gob.mx/leyesy normas/Normas%20Oficiales%20Mexicanas%20vigentes/NOM_085_DOF.pdf, last accessed in February 2010). The results of Equation 1 must comply with the maximum permissible average limit that results from the weighted averages of the maximum permissible emission limits specified in Table 3-4 for the fixed source combustion equipment, when using Equation 2 of [NOM-085-SEMARNAT-1994](#). [[NOM-085-SEMARNAT-1994, Article 5.2](#)]

- 3.14** If the facility has any continuous process combustion equipment that uses solid or liquid fuels, does it ensure that the blow-down/purging process is conducted at least once a shift or in accordance with the manufacturer's specifications? [[NOM-085-SEMARNAT-1994, Article 5.5](#)]

Notes: The NOM provides no indication of how long a shift is, however, based on the terminology used in the NOM, it is presumed to be less than 24 hours.

The blow-down time must not exceed 25 minutes per blower or chimney sweeper ("deshollinador") when the equipment's hourly energy consumption exceeds 43,000 MJ/h, and must not exceed 10 minutes for equipment with hourly energy consumptions less than 43,000 MJ/h. [[NOM-085-SEMARNAT-1994, Article 5.5](#)]

- 3.15** With regard to any fixed source combustion equipment, does the facility keep an operation and maintenance log for all measurements and analyses of emissions, and the quality certificates of the fuel consumed, and does the log include the following: [[NOM-085-SEMARNAT-1994, Article 6.1](#)] **<RECORD KEEPING>**

- Information pertaining to management of the operation ("control de operación"): date, shift, time of report, combustion temperature and pressure, color of smoke, background purge, level purge, safety valve condition, and consumption of fuel;

- Information pertaining to monitoring controls: pressure level, water supply pump start and stop mechanisms, stoppage of operations due to extinguishing of flame; and
- Information pertaining to management of emission contaminants: efficiency, gas temperature, excess air, O₂, CO₂, smoke opacity, data on fuel used in accordance with a certificate, emission analysis conducted in accordance with the conditions set forth in Table [3-5](#)?

Notes: Measurement and analysis of emissions must be conducted with the frequencies and using the methods specified in Table [3-5](#). [[NOM-085-SEMARNAT-1994, Article 6.1.1.3](#)]

The maximum permissible emission levels specified in Table [3-4](#) can only be exceeded during the start-up of the combustion equipment, but the start-up period must not exceed 15 minutes. This operation must not be repeated more than 2 times in a single day for equipment with an hourly energy consumption of less than 43,000 MJ/h, or for a period not exceeding 18 hours in equipment with an hourly energy consumption exceeding 43,000 MJ/h. [[NOM-085-SEMARNAT-1994, Article 6.2.1.1](#)]

When different gaseous emissions are emitted through the same stack, they must be measured separately. [[NOM-085-SEMARNAT-1994, Article 6.2.3](#)]

Where specifications relating to the nominal capacity of the combustion equipment do not exist, this must be determined using Equation 6 of [NOM-085-SEMARNAT-1994](#) (see http://www.semarnat.gob.mx/leyesynormas/Normas%20Oficiales%20Mexicanas%20vigentes/NOM_085_DOI.pdf, last accessed in February 2010). [[NOM-085-SEMARNAT-1994, Article 6.2.4](#)]

V. Chemical Recovery Process of Pulp Manufacturing Plants

Notes: This subsection addresses requirements for atmospheric emissions of total solid particulates (TSP) and total reduced sulfur compounds (TRS) at facilities with chemical recovery processes used in pulp manufacturing.

3.16 If the facility conducts any operations involving chemical recovery processes used in sulfate and soda pulp manufacturing, does it comply with the following emission limits: [[NOM-105-SEMARNAT-1996, Article 4](#)]

- For chemical recovery processes of sulfate pulp (Kraft) mills, the limits specified in Table [3-6](#); and

- For chemical recovery processes of soda pulp manufacturing plants, the limits specified in Table [3-7](#)?

3.17 If the facility conducts any operations involving chemical recovery processes used in pulp manufacturing, does it comply with the pollutant emission measurement and analysis requirements specified in Table [3-8](#)? [[NOM-105-SEMARNAT-1996, Article 4](#)]

VI. VOC Emissions from Automotive Coating Operations

Notes: Requirements in this subsection apply to in-plant coating operations for automobiles, multiple-use passenger and utility vehicles, cargo and light-duty trucks.

The following definitions apply to this subsection: [[NOM-121-SEMARNAT-1997, Article 3](#)]

- “Automobile” is a motor vehicle for transporting up to 10 persons;
- “Body” is the frame or structure of the motor vehicle, which includes exterior parts such as: hood, bumpers, doors, splash guards, roof, floor, trunk and those plastic or metal parts incorporated before they are painted, provided that they are coated in the same lines;
- “Coating” is a thin, protective or decorative film applied to a vehicle body;
- “Existing source” is a facility intended for in-plant coating of new bodies that was in operation or was planned and approved by the competent authority before August 4, 1997 (the date of entry into force of [NOM-121-SEMARNAT-1997](#));
- “Light-duty truck/multiple-use cargo vehicle” is any motor vehicle with or without a chassis, for transporting goods, with a gross vehicle weight less than or equal to 3,850 kilograms;
- “Multiple-use passenger vehicle (including a sport or utility model)” is a motor vehicle, with or without a chassis, for transporting between 8 and 15 people;
- “New source” is a facility intended for in-plant coating of new bodies whose installation was planned and approved by the competent authority on or after August 4, 1997 (the date of entry into force of [NOM-121-SEMARNAT-1997](#));
- “Utility vehicle” is a motor vehicle for transporting property or up to 10 people, with a gross vehicle weight of more than 2,727 kilograms; and
- “Volatile organic compounds (VOCs)” are any organic compounds that have an atmospheric photochemical reaction. The following organic compounds, which have an

imperceptible photochemical reaction, are excluded: methane, ethane, methyl chloroform, dichloromethane, CFC-113, CFC-11, CFC-12, CFC-22, FC-23, CFC-114, CFC-115, HCFC-123, HFC-164a, HCFC-141b, HCFC-142, HCFC-124, HFC-125, HFC-134, HFC-143a, HFC-152a; perfluorocarbon compounds that fall into these classes; cyclic, branched, or linear, completely fluorinated alkanes; cyclic, branched, or linear, unsaturated, completely fluorinated ethers; cyclic, branched, or linear, saturated, completely fluorinated tertiary amines; sulfurs containing saturated perfluorocarbons and with sulfur bonds only to carbon and fluorine; acetone; methyl cyclohexane, and parachlorobenzotrifluoride.

3.18 If the facility conducts any operations involving in-plant coating operations of automobiles, multiple-use passenger and utility vehicles, or cargo and light-duty trucks, does it comply with the following VOC emission limits: [\[NOM-121-SEMARNAT-1997, Article 4.1\]](#)

- If the facility is an existing source, the limits specified in Table [3-9](#); and
- If the facility is a new source, the limits specified in Table [3-10](#)?

3.19 If the facility conducts any operations involving in-plant coating operations of automobiles, multiple-use passenger and utility vehicles, cargo and light-duty trucks, does it comply with the following requirements: [\[NOM-121-SEMARNAT-1997, Article 4.3\]](#)

- Keeps a log book for recording the maintenance of all processes and control equipment; **<RECORD KEEPING>**
- Keeps a monthly record of VOC consumption of all body coating operations, including the following data: **<RECORD KEEPING>**
 - Number and type of coated bodies;
 - Consumption of paint by color and VOC content; and
 - Consumption by type of solvent used;
- Determines the surface areas of the bodies; and
- Calculates the emissions of VOCs?

Notes: The calculation of VOCs for operations of coating of body surfaces is based on the determination of the total amount of VOCs used during the time or period of application. VOCs that are captured by control equipment are subtracted from the total amount of solvents used.

The following is the method for calculating the emission of volatile organic compounds (VOC): [\[NOM-121-SEMARNAT-1997, Article 5\]](#)

$$VE = 1000 \frac{[(VC1 \times VOC1 + (VC2 \times VOC2) + Solv1 + Solv2(RS(A) + RS(B)))]}{B \times S}$$

Where:

VE = VOC emission average, in grams per square meter (g/m²) per month;

VC1 = Volume in liters (l) of paint 1 (e.g.; surface primer) used per month;

VOC1 = Content of VOCs in paint 1, in kilograms per liter (kg/l) determined by ASTM-D-3960 Test Method or by Method 24 of *Title 40, part 60, Appendix A of the Code of Federal Regulations (CFR)*, of the United States of America (*40 CFR 60, Appendix A*);

VC2 = Volume in liters (l) of paint 2 (e.g., base color) used per month;

VOC2 = Content of VOCs in paint 2, in kilograms per liter (kg/l) determined by ASTM-D-3960 Test Method or by Method 24 of *40 CFR 60, Appendix A*;

Solv1 = Weight of solvent 1 (e.g., solvent of the first color) in kilograms used per month;

Solv2 = Weight of solvent 2 (e.g., solvent purge) in kilograms used per month;

RS(A) = Addition of solvents recaptured in vapor phase and recycled or destroyed by VOCs control equipment (e.g., emission of solvents during the application of paint) in kilograms (kg);

RS(B) = Addition of solvents recovered in liquid phase (e.g., purge of solvents or solvents used for cleaning re-circulation lines). The addition must be the net value of any of the contained solids measured by the methods used for the determination of the content of the VOCs in the paints in kilograms (kg);

B = Number of bodies painted in one month; and

S = Total of the area of the surface of the body in square meters (m²).

VII. Oil Refineries - VOC and Sulfur Recovery Requirements

3.20 If the facility is an oil refinery and utilizes an oil-water separator, are at least 95% of VOC emissions controlled by the use of a fixed or floating cover? [[NOM-075-SEMARNAT-1995, Article 4.1](#)]

Notes: [NOM-148-SEMARNAT-2006](#), addressed in Question [3.21](#) through Question [3.24](#), establishes the requirements for the recovery of sulfur from petroleum refining processes for the purpose of reducing the emissions of sulfur compounds to the atmosphere. These requirements apply throughout Mexico and to all of those responsible for the refining of petroleum. [[NOM-148-SEMARNAT-2006, Articles 1 and 2](#)]

The following definitions apply to the requirements in this subsection pertaining to sulfur recovery at petroleum refineries: [[NOM-148-SEMARNAT-2006, Article 3](#)]

- “Field burners” are safety equipment used to burn gases and liquids emitted (“a desfogue”) from process plants during start-up operations, emergency situations or planned stoppages;
- “Other inputs” are intermediary products that are received in the refineries for further processing, in addition to crude (oil);
- “Recovery of sulfur” is recovered sulfur (S_R) expressed as a percentage of the difference between total sulfur and the sulfur remaining in the products ($S_T - S_P$);
- “Recovered sulfur (S_R)” is the quantity of elemental sulfur that is obtained in the sulfur recovery plants and that is not emitted to the atmosphere, expressed in ton/day;
- “Sulfur in products (S_P)” is the quantity of sulfur contained in diverse finished petroleum products, intermediaries and fuels that are produced at the refinery, expressed in ton/day. It includes the sulfur content in the fuels used by the refinery;
- “Sulfur recovery plant” is an installation used to transform sulfur compounds to elemental sulfur which, upon recovery, ceases to be emitted to the atmosphere; the sulfur compounds that are not recovered pass through to the thermal oxidizer;
- “Sulfur to burners and thermal oxidizers (S_O)” is the quantity of sulfur that was not possible to recover and that is emitted to the atmosphere in the form of sulfur dioxide (SO_2) through/from the field burners and thermal oxidizers at the refinery, expressed in ton/day;

- “Thermal oxidizer” is direct flame combustion equipment (“equipo de combustión a fuego directo”) whose function is the oxidation of the sulfur compounds to sulfur dioxide before they are emitted to the atmosphere; it forms part of the sulfur recovery plant; and
- “Total sulfur (S_T)” is the quantity of sulfur contained in the crude oil and in the other inputs that are processed in the refinery; it is expressed in ton/day.

3.21 Does the facility ensure that all emissions from the petroleum refining process, and from the associated desulfurization processes containing sulfur compounds are treated to recover the sulfur and reduce the emission of contaminants to the atmosphere? [NOM-148-SEMARNAT-2006, Article 4.1]

Notes: The sulfur recovery rate at the following specific petroleum refineries was required to be greater than or equal to 90% by the following dates: [NOM-148-SEMARNAT-2006, Article 4.2]

- By February 28, 2008 (enforcement date of NOM-148-SEMARNAT-2006) for refineries located in Cadereyta, N.L., Ciudad Madero, Tamps. and Tula, Hgo.;
- By March 1, 2008 for refineries located in Salamanca, Gto.; and
- By January 1, 2010 for refineries located in Minatitlan, Ver. and Salina Cruz, Oax.

The recovery amount of sulfur must be determined in accordance with Article 5.3 of NOM-148-SEMARNAT-2006; see the complete original text of this NOM at: <http://www.semarnat.gob.mx/leyesynormas/normasoficialesmexicanasvigentes/Atmosfera/NOM%20148%20SEMARNAT%202006%20CONTAMINACIÓN%20ATMOSFÉRICA%20RECUPERACIÓN%20AZUFRE%20DE%20PROCESOS%20DE%20REFINACIÓN%20PETROLEO.pdf> (last accessed in February 2010).

3.22 If the facility has or is a petroleum refinery that was installed after February 28, 2008 (enforcement date of NOM-148-SEMARNAT-2006), does it ensure that the sulfur recovery rate is greater than or equal 95%? [NOM-148-SEMARNAT-2006, Article 4.4]

3.23 If the facility has or is a petroleum refinery, does it determine and record the sulfur recovery rate and the information necessary to calculate this rate in its air emissions logbook (see Question 3.55), including the following information: [NOM-148-SEMARNAT-2006, Article 4.5] **<RECORD KEEPING>**

- Specific date, volume and weight of the crude oil and other inputs processed daily and their total sulfur (S_T);
- Specific volume and weight of different petroleum products produced daily and the sulfur in products (S_P);
- Recovered sulfur (S_R);
- Sulfur to burners and thermal oxidizers (S_Q); and
- Sulfur sent to market with the corresponding remission notes ("notas de remisión")?

Notes: Annex 1 of [NOM-148-SEMARNAT-2006](#) includes the format of the logbook that includes the necessary information to calculate the sulfur recovery rate. [\[NOM-148-SEMARNAT-2006, Article 4.5\]](#) Although not included in this protocol, Annex 1 can be accessed in the original text of the NOM at the weblink provided in the notes to Question 4.21.

- 3.24** Does the facility ensure that it reports the total sulfur dioxide emissions and the sulfur recovery rate in its COA annual environmental report (as addressed in the Subsection entitled, "General Record Keeping/Reporting - Fixed and Mobile Sources," and in Section 2.0 of this protocol, in the Subsection entitled, "Environmental Operating Licenses, Unique Environmental Licenses, and Annual Environmental Reporting")? [\[NOM-148-SEMARNAT-2006, Article 4.6\]](#)

VIII. Sulfuric Acid Manufacturing Facilities

Notes: This subsection of the protocol applies to new or existing sulfuric acid manufacturing operations/facilities.

"Existing facilities" are those facilities where sulfuric acid manufacturing operations were in operation prior to October 23, 1993, the effective date of [NOM-039-SEMARNAT-1993](#).

"New facilities" are those facilities where sulfuric acid manufacturing operations were initially installed after October 23, 1993, the effective date of [NOM-039-SEMARNAT-1993](#).

- 3.25** Are sulfur dioxide emissions from existing facilities that are located within Critical Zones below the maximum allowable levels specified in Part A of Table [3-11](#)? [\[NOM-039-SEMARNAT-1993, Article 5.2\]](#)

Notes: For the purpose of this subsection, the following areas are considered Critical Zones due to the presence of elevated concentrations of atmospheric pollution in these locations: [\[NOM-039-SEMARNAT-1993, Article 5.1\]](#)

- Metropolitan areas of Mexico City, Monterrey, Guadalajara, Coatzacoalcos-Minatitlan in the State of Veracruz;
- Irapuato-Celaya-Salamanca, in the State of Guanajuato;
- Tula-Vito-Apasco, in the State of Hidalgo;
- Industrial Corridor of Tampico-Madero-Altamira, in the State of Tamaulipas; and
- Northern Border Area.

3.26 Are sulfur dioxide emissions from existing facilities that are located in all other areas of the country (i.e., not located in Critical Zones) below the maximum allowable levels specified in Part B of Table [3-11](#)? [\[NOM-039-SEMARNAT-1993, Article 5.2\]](#)

3.27 Are the hourly average sulfur dioxide emissions, measured within the property limits of the facility, less than the following maximum allowable levels: [\[NOM-039-SEMARNAT-1993, Article 5.2.1\]](#)

- For facilities located within Critical Zones, 0.234 ppm; or
- For facilities located in other areas of the country, 0.3 ppm?

3.28 Are sulfur dioxide emissions from new facilities less than the following maximum allowable emissions limits: [\[NOM-039-SEMARNAT-1993, Article 5.3\]](#)

- For facilities with sulfuric acid production capacities between 1 and 500 tons/day, 13.0 kilograms sulfur dioxide per ton of sulfuric acid (100%); or
- For facilities with sulfuric acid production capacities exceeding 500 tons/day, 3.0 kilograms sulfur dioxide per ton of sulfuric acid (100%)?

3.29 For both existing and new facilities, are emissions of sulfur trioxide and sulfuric acid mist less than 1/1,000 of the facility's production volume? [\[NOM-039-SEMARNAT-1993, Article 5.4\]](#)

IX. Dodecylbenzenesulfonic Acid Manufacturing Plants

Notes: This subsection applies to new or existing dodecylbenzenesulfonic acid manufacturing operations/facilities.

"Existing facilities" are those facilities where dodecylbenzene sulfonation processes were in operation prior to October 23, 1993, the effective date of [NOM-046-SEMARNAT-1993](#).

"New facilities" are those facilities where dodecylbenzene sulfonation processes were initially installed, or where existing processes were modified after October 23, 1993, the effective date of [NOM-046-SEMARNAT-1993](#).

3.30 Are emissions from existing facilities below the following maximum allowable levels: [NOM-046-SEMARNAT-1993, Article 5.1, Table 1](#)

- Less than 3.0 grams sulfur dioxide per kilograms of dodecylbenzenesulfonic acid produced (100%); and
- Less than 1.2 grams sulfur trioxide mist and sulfuric acid (expressed as dodecylbenzenesulfonic acid) per kilogram of dodecylbenzenesulfonic acid produced (100%)?

3.31 Are emissions from new facilities below the following maximum allowable levels: [NOM-046-SEMARNAT-1993, Article 5.1, Table 1](#)

- Less than 2.0 grams sulfur dioxide per kilogram of dodecylbenzenesulfonic acid produced (100%); and
- Less than 1.2 grams sulfur trioxide mist and sulfuric acid (expressed as dodecylbenzenesulfonic acid) per kilogram of dodecylbenzenesulfonic acid produced (100%)?

X. Glass Manufacturing Processes

Notes: The following processes are exempt from the requirements in this subsection: [NOM-097-SEMARNAT-1995, Article 1.2](#)

- Craft/artisan ovens;
- Glass reheating operations; and

- Ovens for painting and decorating glass (i.e., facilities that use manufactured glass as raw material).

For the purpose of this subsection, “Critical Zones” are those locations that have high air pollution concentrations, and include the following [\[NOM-097-SEMARNAT-1995, Article 4.1\]](#)

- Metropolitan areas of Mexico City, Monterrey, Guadalajara, Coatzacoalcos-Minatitlan in the State of Veracruz;
- Irapuato-Celaya-Salamanca in the State of Guanajuato;
- Tula-Vito-Apasco in the State of Hidalgo;
- Industrial Corridor of Tampico-Madero-Altamira in the State of Tamaulipas; and
- Northern Border Area.

3.32 Are nitrogen oxide emissions from glass manufacturing processes within the maximum permissible limits specified in Tables 1, 2, and 3 of [\[NOM-097-SEMARNAT-1995\]](#), as provided in Appendix 3-B? [\[NOM-097-SEMARNAT-1995, Article 4.2\]](#)

Notes: Appendix 3-B also includes the equations used to estimate oven emissions.

3.33 Does the facility ensure that any ovens that have a production capacity of 100 tons of melted glass/day and that are located within Critical Zones are equipped with continuous monitoring systems for nitrogen oxides? [\[NOM-097-SEMARNAT-1995, Article 4.8\]](#)

3.34 Are nitrogen oxide emissions monitored as a function of the concentration of O₂ and CO and recorded daily in the facility's operation log book? [\[NOM-097-SEMARNAT-1995, Article 4.8\]](#) **<RECORD KEEPING>**

3.35 If the facility is located in an area other than a Critical Zone and it utilizes ovens with capacities of fewer than 100 tons/day, are nitrogen oxide emissions evaluated at least every 6 months? [\[NOM-097-SEMARNAT-1995, Article 4.9\]](#)

3.36 Does the facility evaluate particulate matter emissions from process ovens every 6 months? [\[NOM-097-SEMARNAT-1995, Article 4.10\]](#)

3.37 Has the facility prepared source emission compliance reports that include the following information: [\[NOM-097-SEMARNAT-1995, Article 4.11\]](#)

- The stack emissions parameters;
- The source operating temperature during monitoring;
- The volume and type of fuel at 20°C or 1 kg/cm²;
- The percentage of recycled glass (cullet) processed; and
- The type of glass and/or processed product manufactured?

Notes: Though the NOM does not expressly state which agency will be receiving these reports, PROFEPA, the inspection arm of SEMARNAT, is referenced in Article 7.1 of [NOM-097-SEMARNAT-1995, Article 7.1](#) as being the entity responsible for enforcing compliance with this NOM. [\[NOM-097-SEMARNAT-1995, Article 7.1\]](#)

XI. Cement Manufacturing Operations

Notes: The questions in this subsection apply to emissions limits for stationary sources dedicated to the manufacturing of hydraulic cement using conventional fuels or mixtures with other materials or wastes that are used as fuels. Emissions limits for particulates, nitrogen oxides, sulfur dioxides, carbon monoxide, heavy metals, dioxins and furans, total hydrocarbons, and hydrochloric acid are set forth in [NOM-040-SEMARNAT-2002](#). [\[NOM-040-SEMARNAT-2002, Article 3\]](#)

The following definitions apply to cement manufacturing operations: [\[NOM-040-SEMARNAT-2002, Article 3\]](#)

- “Conventional fuels” are fossil fuels such as natural gas and coal, petroleum derivatives such as liquefied petroleum gas (LPG), diesel, fuel oil (“combustóleo”), and petroleum coke (“coque de petróleo”);
- “Formulated fuel” is fuel derived from a controlled mixture of various types of liquid and solid waste streams, including hazardous wastes, that has a recoverable heat output and that is manufactured by a plant authorized for this purpose by SEMARNAT. The following wastes are excluded from the waste streams permitted for the production of “formulated fuel”: pesticides, polychlorinated dioxins, polychlorinated dibenzofurans, radioactive wastes, compressed gases, biological-infectious wastes, organochlorinated compounds and cyanides; and
- “Hydraulic cement” (“cemento hidráulico”) is a finely pulverized inorganic material (clinker) that is added to water, either alone or mixed with sand, gravel, asbestos and other similar materials, and that has the property to set or harden, including under water, by virtue of the

chemical reactions during hydration. Once hardened, hydraulic cement conserves its resistance and stability. It is classified in accordance with *NMX-C-414-ONNCCE-1999*, point 2 (accessible from <http://www.economia-nmx.gob.mx/>, last accessed in February 2010).

- 3.38** If the facility manufactures hydraulic cement using conventional fuels or mixtures with other materials or wastes that are used as fuels, does it comply with the applicable limitations and requirements set forth in Appendix 3-C? [[*NOM-040-SEMARNAT-2002, Article 4*](#)]
- 3.39** If the facility manufactures hydraulic cement in the manner described in Question [3.38](#) and it exceeds the maximum permissible emissions levels established in Tables 1 and 2 in Appendix 3-C, does it ensure the following: [[*NOM-040-SEMARNAT-2002, Articles 4.12 and 4.13*](#)]
- The exceedances only occur temporarily during the initial start-up of the combustion equipment; or
 - The exceedances only occur temporarily during the reheating of the oven or furnace for operational reasons; and
 - The duration and conditions of the operations during these exceeded levels are recorded in a log book? **<RECORD KEEPING>**

XII. Desulfurizing Plants

Notes: The requirements in this subsection apply to facilities used for desulfurization of sour gases and condensates (“desulfurizing plants”). The requirements do not apply to those desulfurizing plants with a nominal capacity of less than 2 tons/day, those located on maritime platforms, and those used in petroleum refineries. (Sulfur recovery at petroleum refineries is addressed in the Subsection entitled, “Oil Refineries - VOC and Sulfur Recovery Requirements”). [[*NOM-137-SEMARNAT-2003, Article 2*](#)]

Existing and new desulfurizing plants for sour gas and condensates with a nominal capacity from 2 to 100 tons/day had three years from the enforcement date of [*NOM-137-SEMARNAT-2003*](#) (three years from May 30, 2003, which was May 30, 2006) to comply with the requirements in this subsection. [[*NOM-137-SEMARNAT-2003, Second Transitional Article*](#)]

The following definitions apply to this subsection: [[*NOM-137-SEMARNAT-2003, Article 4*](#)]

- “Acid gas” is a mixture of hydrogen sulfide (H₂S) and carbon dioxide (CO₂) extracted from the sour gas and condensates in the desulfurizing plants;

- “Emissions control system associated with the desulfurization process of sour gas or sour condensates” is the stage of the treatment of sour gas, to reduce emissions of the sulfur compounds to the atmosphere, typically consisting of a sulfur recovery plant, a thermal oxidizer of flue/tail gas, and continuous monitoring equipment for emissions to the atmosphere;
- “Critical Zones” include the following: the Zona Fronteriza Norte, the metropolitan zones of Monterrey and Guadalajara (ZMCG); the population centers of: Coatzacoalcos-Minatitlán (municipalities of Coatzacoalcos, Minatitlán, Ixhuatlán del Sureste, Cosoleacaque, and Nanchital) in the State of Veracruz; Irapuato-Celaya-Salamanca (municipalities of Celaya, Irapuato, Salamanca, and Villagrán) in the State of Guanajuato; Tula-Vito-Apasco (municipalities of Tula de Allende, Tepeji de Ocampo, Tlahuelilpan, Atitalaquia, Atotonilco de Tula, Tlaxcoapan, and Apaxco) in the states of Hidalgo and of México; industrial corridor of Tampico-Madero-Altamira (municipalities of Tampico, Altamira, and Ciudad Madero) in the State of Tamaulipas; the municipality of Tijuana in the State of Baja California; and the municipality of Ciudad Juarez in the State of Chihuahua;
- “Desulfurizing plant for sour gas and condensates” is an installation for the treatment of sour gases and condensates in which the impurities of hydrogen sulfide and carbon dioxide are extracted;
- “Equipment for the continuous monitoring of emissions to the atmosphere (EMCE)” is the set of equipment required for taking samples in the stack of the thermal oxidation system or equivalent, testing and maintenance of the thermal oxidation system or equivalent, analyzing the sampling results, and connecting to systems for transferring and storing the data, that provide a permanent record of the emissions to the atmosphere in units of mass by unit of time;
- “Existing plants” are desulfurizing plants for sour and condensed gases and sulfur recovery plants of that were constructed or under construction on or before May 30, 2003 (the date of publication of [NOM-137-SEMARNAT-2003](#));
- “Flue/tail gas” (“gas de cola”) is a mixture of gases that contains the remaining sulfur compounds in the form of hydrogen sulfide (H_2S), sulfur dioxide (SO_2), carbonyl disulfide (COS ; note this is the formula as it appears in the NOM, but it may be incorrect), carbon disulfide (CS_2) and sulfur vapors that were not able to be retained in the emissions control system or in the sulfur recovery plants, and that must undergo a thermal oxidation process, or an equivalent process, to reduce the toxicity;
- “Flue/tail gas thermal oxidizer” is combustion equipment that uses direct flame to oxidize the hydrogen sulfide contained in the sulfur dioxide flue/tail gases;

- “Flue/tail gas thermal oxidizer stack” is a conduit through which the remaining compounds from sulfur recovery plants are emitted in the form of sulfur dioxide and traces of sulfuric acid;
- “Mass emission of sulfur dioxides” ($E(SO_2)$) is the quantity of sulfur dioxide emitted through the stack of the sulfur recovery plant’s thermal oxidizer or emissions control system. It is determined using continuous emissions monitoring equipment and expressed in metric tons/day;
- “Modified plants” are sulfur recovery plants or plants for the desulfurizing of sour gases and condensates, which have been redesigned to increase the efficiency of recovery, and for which modifications were initiated after May 30, 2003 (the date of publication of [NOM-137-SEMARNAT-2003](#));
- “New plants” are sulfur recovery plants or plants for the desulfurizing of sour gases and condensates for which construction started after May 30, 2003 (the date of publication of [NOM-137-SEMARNAT-2003](#));
- “Rest of the country” is the entire national territory of Mexico, excluding the Critical Zones;
- “Sour condensates” are hydrocarbons associated with sour gas that condense as a result of variation in pressure and temperature of the fluid; they contain hydrogen sulfide (H_2S) and carbon dioxide (CO_2);
- “Sour gas” is a gaseous mixture of hydrocarbons from petroleum and gas sources that contains hydrogen sulfide (H_2S) and carbon dioxide (CO_2) as impurities; and
- “Sulfur recovery plant” is an installation for extracting sulfur from acidic gas in the form of liquid sulfur, using thermal and/or catalytic conversion processes, that is commonly used for the control of emissions from the process of desulfurization of hydrocarbons.

3.40 Does the facility ensure that any existing, new or modified plants used for the desulfurization of sour gases and condensates control their sulfur-containing emissions in accordance with the notes to this question, and that the emissions are monitored continuously? [\[NOM-137-SEMARNAT-2003, Article 5.1\]](#)

Notes: The minimum efficiency (E_m) of the control of sulfur-containing emissions to the atmosphere during standard operating conditions are those established in Table 1 below, except for those specified in the last paragraph of this note. The efficiency is expressed in percent recovery of sulfur of the nominal capacity of the emissions control system (X) and of the average concentration of H_2S in the acidic entry gas to the system or to the recovery

plants (Y), and which is determined in accordance with the method established in Article 7.2 of [NOM-137-SEMARNAT-2003](#). This NOM is available at: <http://www.semarnat.gob.mx/leyesynormas/Normas%20Oficiales%20Mexicanas%20vigentes/NOM-137-SEMARNAT-2003.pdf>, last accessed in February 2010. [[NOM-137-SEMARNAT-2003, Article 5.2](#)]

Table 1 - Minimum Emissions Control Efficiency (or Sulfur Recovery System)

Concentration (% of H ₂ S in acidic gas), Y	Nominal Capacity of the Sulfur Recovery System or Plant (tons of sulfur recovered per day), X		
	2 to 5 tons/day	5 to 300 tons/day	> 300 tons/day
> 20	E _m = 74%	E _m = 85.35X ^{0.0144} Y ^{0.0128} %	E _m = 97.5%
10 - 20	E _m = 74%	E _m = 90.8%	E _m = 90.8%
< 10	E _m = 74%	E _m = 74%	E _m = 74%

E_m = minimum efficiency

Any new plants used for the desulfurization of sour gases and condensates that are installed in a Critical Zone must have an emissions control system (or sulfur recovery system) with a minimum efficiency of greater than or equal to 98%, regardless of the capacity. [[NOM-137-SEMARNAT-2003, Article 5.3](#)]

3.41 Does the facility ensure that the concentration of hydrogen sulfide in the exit gases of the stack is less than or equal to 10 ppm by volume? [[NOM-137-SEMARNAT-2003, Article 6.1](#)]

3.42 Does the facility keep a log book for the operation and maintenance for each desulfurization plant, and does it ensure that the log book remains in the work place for a minimum period of five years? [[NOM-137-SEMARNAT-2003, Article 6.2](#)] **<RECORD KEEPING>**

Notes: This log book can be maintained electronically as part of the computerized controls of the plant. **<RECORD KEEPING>**

3.43 At a minimum, is the following information recorded in the log book: [[NOM-137-SEMARNAT-2003, Articles 6.2.1, 6.2.2 and 6.2.3](#)] **<RECORD KEEPING>**

- Operational control: date, daily consumption of fuel in the thermal oxidizer, daily average operating temperature of the thermal oxidizer, determination every 24 hours of the volume in humid/wet base of the incoming acidic gas (millions of cubic feet per day, “MMPCD”) at conditions of 1.0 kgf/cm² and 20 degrees Celsius, results of the daily concentration in mol of H₂S dry base, daily concentration of sulfur compounds in the flue/tail gas, and records of the calculations of quarterly (“trimestral”) efficiency and averages;

- Contaminating emissions control: daily average of the following parameters: sulfur dioxide concentration and volumetric flow of the exit gases of the thermal oxidizer; mass emission in tons/day of sulfur dioxide (E (SO₂); and calculations of quarterly averages; and
- Maintenance control: modifications to the critical equipment: blower; thermal reactor; condensers; thermal oxidizer; control systems; and catalyzer?

3.44 Does the facility ensure that continuous sulfur dioxide monitoring equipment is installed and maintained in good condition? [[NOM-137-SEMARNAT-2003, Article 6.3](#)]

Notes: This continuous sulfur dioxide monitoring equipment must be operated at least 90% of the operating time of the emissions control system used. It must include an automatic data processing system that records at least 12 readings per hour, calculates the daily average of the indicated parameters, and generates a printed daily report with the date and identification of the equipment. The report must be annexed to the log book. [[NOM-137-SEMARNAT-2003, Article 6.3.1](#)] **<RECORD KEEPING>**

The method for monitoring the sulfur dioxide concentration in emissions from the stack of the thermal oxidizer must be either absorption spectroscopy in the non-dispersed ultraviolet range or an equivalent method. The volumetric flow of the gases must be that of the differential pressure in a pitot tube. The facility must conduct the procedure established in NMX-AA-009-SCFI-1993 (see <http://www.economia-nmx.gob.mx/>; last accessed in February 2010), and follow the procedures and calculations specified by the manufacturer. [[NOM-137-SEMARNAT-2003, Article 6.3.2](#)]

Monitoring platforms and sampling ports must be installed and maintained in each one of the stacks of the thermal oxidizers, in accordance with the specifications set forth in NMX-AA-009-SCFI-1993. [[NOM-137-SEMARNAT-2003, Article 6.3.3](#)]

To verify the operation of equipment in the stack of every thermal oxidizer, at least two additional sampling ports must be installed and placed 30 centimeters below those required in NMX-AA-009-SCFI-1993 and must form a 45-degree angle, and be accessible from the sampling platform. [[NOM-137-SEMARNAT-2003, Article 6.3.3](#)]

XIII. Waste Incineration Requirements - Emission Levels

Notes: The requirements in this subsection apply to all installations used for the incineration of wastes, with the exception of crematory ovens ("hornos crematorios"), industrial ovens, and boilers that use wastes as alternate sources of fuel, and radioactive wastes (which are addressed by other legislation). [[NOM-098-SEMARNAT-2002, Articles 1 and 2](#)]

The requirements of [NOM-098-SEMARNAT-2002](#), other than those specifically addressing emissions levels for waste incineration facilities, are addressed in the Subsection entitled, “Waste Incineration” in Section 4.0 of this protocol.

In addition to definitions pertaining to the operation of waste incineration installations that are included in the Subsection entitled, “Waste Incineration” in Section 4.0 of this protocol, the following definitions apply to the requirements in this subsection: [\[NOM-098-SEMARNAT-2002, Article 4\]](#)

- “Continuous emissions monitoring system” refers to the automated equipment for the continuous sampling used to measure the concentrations of a contaminant, reported as hourly or rolling averages (“horarios promedios móviles”);
- “Continuous monitoring” refers to monitoring conducted with automated equipment that takes a minimum of 15 readings in not less than 60 minutes and not more than 360 minutes. The results of the continuous monitoring are comprised of the average of the readings taken during the monitoring period;
- “Emission control equipment” refers to the control equipment used at the end of the incineration process to minimize the emission of particles and combustion gases;
- “Incineration” refers to any process used to reduce the volume, decompose, or alter the physical, chemical, and biological composition of a solid, liquid, or gaseous waste by means of thermal oxidation, and in which the combustion factors such as temperature, retention time and turbulence can be controlled to achieve established efficiency, efficacy and environmental parameters. This definition includes pyrolysis, gasification and plasma processes, where the sub-products of combustion generated in these processes are combusted in an oxygen rich environment; and
- “Incinerator” refers to the equipment used for the thermal oxidation of wastes, with or without recovery of the heat produced by the combustion, along with its respective temperature control and gas composition devices, as well as the hoppers or chambers (“tolvas”) for the receipt of the ash.

3.45 If the facility operates a waste incinerator, does it comply with the following requirements: [\[NOM-098-SEMARNAT-2002, Articles 9.1 through 9.5\]](#)

- The emission limits set forth in Table [3-12](#);

Notes: The maximum emission limits, sampling frequencies and evaluation methods established in Table [3-12](#) apply at all times during the operation of the waste incinerator, except during equipment start-up and shut-down periods.

- When using dry scrubbers (“lavadores secos”), the maximum temperature of the emission gases at the point prior to the emissions control equipment is less than 250°C;
- When dry scrubbers are not used, the temperature of gases at the point of emission from the incinerator stack does not exceed 250°C;
- If the continuous monitoring equipment is out of service, the following requirements are met:
 - A daily grab sample is taken until the continuous monitoring equipment is put back into service; and

Notes: The facility must stop feeding wastes into the incinerator when it is not possible to take the daily point measurement. [[NOM-098-SEMARNAT-2002, Articles 9.4](#)]

- SEMARNAT is immediately notified that the continuous monitoring equipment is out of service and of the expected time before it returns to service, and the facility complies with any conditions specified by SEMARNAT?

3.46 If the facility operates a waste incinerator, does it maintain a daily record (either in a bound log book or an electronic database) that is available for review by the Attorney General's Office of Environmental Protection (Procuraduría Federal de Protección al Ambiente, or PROFEPA), with the following information: [[NOM-098-SEMARNAT-2002, Article 7.9](#)]
<RECORD KEEPING>

- Results of monitoring for the contaminants specified in Table [3-12](#); and
- An indication of the location of the monitoring records (“registros”) if continuous measurements are conducted?

Notes: Only the air emission portions of this daily record are addressed in this question; however, the complete list of items that are required in this daily record are addressed in the Subsection entitled, “Waste Incineration” in Section 4.0 of this protocol.

XIV. Gas Station Vapor Recovery Systems in Mexico Valley

Notes: This subsection applies to the installation of gasoline vapor recovery systems at public service stations and at on-site, self-service stations located in the Mexico Valley.

The following definitions apply to requirements addressed in this subsection: [\[NOM-092-SEMARNAT-1995, Articles 3.1, 3.2, 3.8, 3.9, 3.10, and 3.14\]](#)

- “Efficiency in place” is a parameter that indicates the percent of gasoline vapors controlled by the action of a vapor recovery system. It is determined through an integral evaluation of the emissions generated by the discharge of gasoline from the storage tank to the tank of the vehicle, in addition to the emissions generated in storage tanks and through the processing units for surplus gasoline vapor;
- “Laboratory efficiency” is a parameter that indicates the percent of gasoline vapors controlled by the action of a vapor recovery system that otherwise would be emitted freely into the atmosphere. This parameter is determined by installing the system in a testing laboratory and subjecting it to the analytical method established in [NOM-093-SEMARNAT-1995](#), see <http://www.semarnat.gob.mx/leyesynormas/Normas%20Oficiales%20Mexicanas%20vigentes/CNV-093.pdf>, last accessed in February 2010;
- “Mexico Valley” is the area comprising the 16 political delegations of the Federal District, and the following 37 municipalities of the State of Mexico: Acolman, Amecameca, Atenco, Atizapán de Zaragoza, Coacalco, Cuautitlán de Romero Rubio, Cuautitlán Izcalli, Chalco, de Covarrubias, Chiautla, Chicoloapan, Chiconcuac, Chimalhuacán, Ecatepec de Morelos, Huixquilucan, Ixtapaluca, Jaltenco, La Paz, Melchor Ocampo, Naucalpan de Juárez, Nextlalpan, Nezahualcóyotl, Nicolás Romero, Otumba, Ozumba, Tecámac, Teoloyucan, Tepotzotlán, Texcoco, Tezoyuca, Tlalmanalco, Tlalnepantla de Baz, Tultepec, Tultitlán, Valle de Chalco Solidaridad, Villa del Carbón, and Zumpango;
- “Phase I vapor recovery system” is the equipment for the recovery and control of gasoline vapor emissions during the transfer of gasoline from the tanker truck to the fuel storage container at the service station;
- “Phase II vapor recovery system” is the equipment for the recovery and control of gasoline vapor emissions during the transfer of gasoline from the storage tank to the vehicle; and
- “Vapor recovery system” includes the piping, connections, and equipment designed to recover and control the emission of gasoline vapors produced during fuel transfer operations at service stations, which otherwise would be emitted freely into the atmosphere. Vapor recovery is divided into two phases known as Phase I and Phase II.

Although beyond the scope of this protocol, *NOM-093-SEMARNAT-1995* establishes the testing method to determine the laboratory efficiency of gasoline vapor recovery systems at service and self-service/internal stations.

- 3.47** Has the facility installed a vapor extraction system? [[*NOM-092-SEMARNAT-1995, Article 1.2*](#)]

Notes: The service station vapor extraction system must meet certain efficiency and discharge requirements. More information on these specifications is available in the full text of [*NOM-092-SEMARNAT-1995*](#), available at (last accessed in March 2010): <http://www.semarnat.gob.mx/leyesynormas/Normas%20Oficiales%20Mexicanas%20vigentes/NOM-ECOL-092.pdf>.

- 3.48** Does the facility ensure that tank trucks used for conducting the transfer of gasoline to the storage tanks have a Phase I vapor recovery system? [[*NOM-092-SEMARNAT-1995, Article 4.11*](#)]

Notes: The filling point of the storage tank must be equipped with a spill container/containment area with a minimum capacity of 19 liters. [[*NOM-092-SEMARNAT-1995, Article 4.11*](#)]

- 3.49** Does the facility ensure that storage tanks are equipped with Phase I vapor recovery systems and are connected hermetically to the fuel supply devices and the vapor recovery devices during the transfer operation from the tanker truck? [[*NOM-092-SEMARNAT-1995, Article 4.12*](#)]

- 3.50** Does the facility ensure that the transfer of gasoline to vehicles is carried out in a manner that ensures that the gasoline vapors generated are collected by a Phase II gasoline vapor recovery system? [[*NOM-092-SEMARNAT-1995, Article 4.13*](#)]

- 3.51** Does the facility ensure that the hermetic seals of the tanks and piping are verified through a non-destructive test prior to installing the vapor recovery system? [[*NOM-092-SEMARNAT-1995, Article 4.14*](#)]

- 3.52** Does the facility ensure that a hermetic seal test and a test to detect any obstruction and verify the free passage of vapors are conducted prior to operating the vapor recovery system? [[*NOM-092-SEMARNAT-1995, Article 4.15*](#)]

- 3.53** Do installations equipped with Phase I and/or Phase II vapor recovery systems have signs that meet the following requirements: [\[NOM-092-SEMARNAT-1995, Article 4.17\]](#)
- Are 60 x 40 cm;
 - Are constructed of a resistant material with a white background and with black lettering;
 - Are located above the walls and visible from the exterior of the building of the service station; and
 - Contain the following information:
 - Registration number of the service station, assigned by PEMEX (“Petróleos Mexicanos”);
 - Installation date of the vapor recovery system;
 - Capacity of the installation, including number of hoses available to pump gasoline, number of gasoline tanks, total capacity expressed in liters, and existence of vapor interconnections between tanks;
 - Registration number, make and model of the vapor recovery system; and
 - Registration number for training and approval of the entity in charge of the installation, the start-up, and the maintenance of the vapor recovery system?

XV. Ozone Depleting Substances - Montreal Protocol

Notes: This subsection was prepared with the assistance of in-country practitioners, and is intended to provide an overview of the global compliance requirements pertaining to ozone depleting substances (ODS) in Mexico.

The *Kyoto Protocol on Climate Change* was ratified by Mexico via the issuance of the *Decree Promulgating the Kyoto Protocol*, published in the D.O.F. on November 24, 2000 (*Decreto Promulgatorio del Protocolo de Kyoto*).

Under Article 5 of the [Montreal Protocol](#), Mexico is classified as a developing country.

Ozone depleting substances (ODS) regulated under the [Montreal Protocol](#), including those listed in the different amendments to the Protocol, are addressed at: http://ozone.unep.org/Ratification_status/evolution_of_mp.shtml (last accessed in February 2010).

In Mexico, the authority responsible for Mexico's obligations under the [Montreal Protocol](#) is the ODS Protection Unit under SEMARNAT.

Currently Mexico has no national legislation pertaining specifically and exclusively to ODS. However, Mexico generally follows the Article 5 requirements (which apply specifically to developing countries) of the [Montreal Protocol](#). The control and ban of ODS has been conducted using voluntary agreements between SEMARNAT and the industries involved. Examples of voluntary agreements involve projects to eliminate the use of chlorofluorocarbons (CFCs) in foam production and as solvents in medical equipment. Information concerning SEMARNAT's Ozone Layer Protection Program can be accessed at the following website (last accessed in March 2010): <http://www.semarnat.gob.mx/gestionambiental/calidaddelaire/Pages/proteccionalacapadeozono.aspx>.

Mexico controls the import of certain substances (including methyl bromide), as well as hazardous substances (including some ODS), through an intergovernmental Committee known as COFEPRIS (Comisión Federal para la Protección contra Riesgos Sanitarios).

The SEMARNAT ODS Protection Unit reviews the application for each COFEPRIS import authorization against the ODS listing in the [Montreal Protocol](#). The unit first determines if the substance can still be imported and, if so, a quota is set for the specific importer, bearing in mind the total annual quota available for Mexico for that ODS. This quota is calculated annually based on market consumption of the previous year and the availability of substitutes.

Article 1 of the [Agreement Through Which the Public is Generally Informed of the Reduction Calendar/Schedule for the Consumption/Use and the Inventories of Chlorofluorocarbons in the United States of Mexico](#) informs the public of the reduction schedule for the use and the inventories of CFC-11, CFC-12, CFC-113, CFC-114 and CFC-115. The schedule is as follows:

	2007	2008	2009	2010
	Metric Tons per year			
Maximum permissible consumption of CFCs	50	50	50	0
Maximum quantities of stored quantities	1639	1264	1119	979

Article 2 of this Agreement states that in order for Mexico to meet its international obligations, SEMARNAT will only authorize the importation of CFCs when, in the authorizations, the amounts that will not exceed the limits addressed in the preceding table.

As of 1 January 2010, authorizations are no longer granted to new ODS importers. ODS listed in Appendices A and B of the Montreal Protocol have been prohibited for import into Mexico effective 1 January 2010, with the exception of the substances listed in Appendix B, Group III, which can be imported for laboratory uses.

The list of controlled COFEPRIS substances will be amended in the future, and will be based on, for example, the ratification of amendments of the [Montreal Protocol](#) that would restrict the import of a given ODS (i.e., addition of bromochloromethane, pursuant to ratification of the *Beijing Amendment to the Montreal Protocol*).

In addition to import restrictions for certain ODS, COFEPRIS regulates the import of certain other chemicals (e.g., pesticides, fertilizers and toxic substances). See Section 16.0 of this protocol for more details. The following COFEPRIS link includes the different types of permit forms and related links (e.g., see link entitled “COFEPRIS-01-021-E” for ODS import permit details, last accessed in February 2010): http://www.cofepris.gob.mx/wb/cfp/permiso_de_importacion.

XVI. General Record Keeping/Reporting - Fixed and Mobile Sources

- 3.54** If the facility has any fixed emission sources subject to federal jurisdiction (as defined in Question [3.1](#), does it complete and submit a COA Report (“Cédula de Operación Anual”) between January 1 and April 30 of each year? [[Air Regulation, Articles 17, subpart II, 20 and 21](#)] and [[Decree Amending General Law, Article 2](#)]

Notes: The COA is addressed in the Subsection entitled, “Environmental Operating Licenses, Unique Environmental Licenses, and Annual Environmental Reporting” in Section 2.0 of this protocol. [[Agreement that the Requirements in Article 17, subpart II of the Air Regulation are to be Presented Using the Annual COA Form, Article 1](#)]

- 3.55** Does the facility maintain a log book of the operation and maintenance of process equipment and air pollution control equipment? [[Air Regulation, Article 17, subpart IV](#)]
<RECORD KEEPING>

Notes: Any facility involved in the manufacturing of hydraulic cement referred to in [NOM-040-SEMARNAT-2002](#) (see the Subsection entitled, “Cement Manufacturing Operations”), must record the specific information listed in points 4.12 and 4.13 of Appendix 3-C in the log book referenced in this question. **<RECORD KEEPING>**

- 3.56** Does the facility give SEMARNAT advance notice prior to re-starting operations following a scheduled shutdowns, or immediate notification in the case of unplanned shutdowns? [[Air Regulation, Article 17, subpart VII](#)]

- 3.57** If the facility is an oil refinery and uses an oil-water separator, has it informed SEMARNAT of all major maintenance work schedules or equipment failures, and VOC emissions from the oil-water separator, including the time that is required for the equipment to be repaired? [[NOM-075-SEMARNAT-1995, Article 4.3](#)]

Notes: “Major maintenance work” is not defined in [NOM-075-SEMARNAT-1995](#).

- 3.58** Does the facility provide immediate notification to SEMARNAT in the event of the failure of air pollution control equipment that may cause contamination? [[Air Regulation, Article 17, subpart VIII](#)]
- 3.59** If the facility has multiple emission point sources, does it include all of these sources when reporting its total emissions to SEMARNAT? [[Air Regulation, Article 25](#)]

Notes: The *Mandatory Vehicle Verification Program for the First Six Months of 2010* was issued by SEMARNAT and applies to vehicles circulating within the Federal District of Mexico City. It specifies vehicle compliance verification tests to ensure compliance with current emissions limits, for the period of 1 January 2010 through 30 June 2010. This Verification Program is beyond the scope of this protocol, but can be accessed at the following weblink: (last accessed in February 2010) <http://www.sma.df.gob.mx/sma/links/download/biblioteca/progveri1sem2010.pdf>.

Although not further addressed in this subsection, [NOM-047-SEMARNAT-1999](#) addresses additional requirements pertaining to the characteristics of the monitoring and testing equipment and the procedure for verifying the emission of contaminants from automotive vehicles in circulation that use gasoline, liquefied petroleum gas, liquefied natural gas, and other alternative fuels. [NOM-047-SEMARNAT-1999](#) can be accessed at the following weblink: (last accessed in February 2010) <http://www.semarnat.gob.mx/leyesynormas/Normas%20Oficiales%20Mexicanas%20vigentes/NOM-ECOL-047.pdf>.

- 3.60** Does the facility have a current emissions testing certificate for any gasoline combustion engine vehicles? [[NOM-041-SEMARNAT-2006, Articles 1 and 6.4.3](#)] **<RECORD KEEPING>**

Notes: This certificate must be obtained from the local vehicle emissions testing center in accordance with the calendar set forth in its vehicle emissions testing program, and must indicate that the vehicle does not exceed the emission limits and other parameters. [[NOM-041-SEMARNAT-2006, Articles 1 and 6.4.3](#)]

Article 1 of [NOM-041-SEMARNAT-2006](#) addresses the permissible emission limits from automotive vehicles that are in circulation (i.e., those that travel on public roadways) and use gasoline as fuel.

The requirements in this question apply to all automotive vehicles that are in circulation, with the exception of automotive vehicles with a net weight ("peso bruto") of less than 400 kg, motorcycles, agricultural tractors, and machinery used in the construction and mining industries. [[NOM-041-SEMARNAT-2006, Articles 1 and 3.9](#)]

New vehicles can be exempted from the mandatory vehicle emissions testing requirements for a period of up to two years following their acquisition date by the competent federal and/or local authorities. These authorities may broaden this exemption in accordance with the policies concerning the promotion of vehicles with new emission control technologies.

[\[NOM-041-SEMARNAT-2006, Article 4.4\]](#)

The state governments, the government of the Federal District, or the Secretariat of Communications and Transport, will establish vehicle testing programs. [\[NOM-041-SEMARNAT-2006, Article 6.4.1\]](#)

The vehicle emissions testing center must issue an official document to the vehicle owner specifying the test results. In cases when the tested emissions do not comply with the limits set forth in [NOM-041-SEMARNAT-2006](#), the owner of the vehicle must undertake the necessary vehicle maintenance and have the vehicle retested until it passes the test and the approval documentation is obtained. [\[NOM-041-SEMARNAT-2006, Article 6.4.6\]](#)

3.61 Does the facility have a current emissions testing certificate for any diesel-powered combustion engine vehicles? [\[NOM-045-SEMARNAT-2006, Articles 1 and 7.1.3\]](#)

<RECORD KEEPING>

Notes: This certificate must be obtained from the local vehicle emissions testing center in accordance with the calendar set forth in its vehicle emissions testing program, and must indicate that the vehicle does not exceed the emission limits and other parameters. [\[NOM-045-SEMARNAT-2006, Articles 1 and 7.1.3\]](#)

Article 1 of [NOM-045-SEMARNAT-2006](#) also addresses the permissible emission limits from automotive vehicles that are in circulation and use diesel as fuel.

The requirements in this question apply to all automotive vehicles that are in circulation (i.e., on-land vehicles used to transport passengers or loads on public roadways), with the exception of machinery equipped with diesel motors that is used in agricultural, construction and mining activities. [\[NOM-045-SEMARNAT-2006, Articles 1 and 3.20\]](#)

SEMARNAT, the Federal District government, and the state governments will establish vehicle testing programs. [\[NOM-045-SEMARNAT-2006, Article 7.1.1\]](#)

The vehicle emissions testing center must issue an official document to the vehicle owner specifying the test results. In cases when the tested emissions do not comply with the limits set forth in [NOM-045-SEMARNAT-2006](#), the owner of the vehicle must undertake the necessary vehicle maintenance and have the vehicle retested until it passes the test and the approval documentation is obtained. [\[NOM-045-SEMARNAT-2006, Articles 7.1.5 and 7.1.6\]](#)

Table 3-1**Air Emissions Sampling/Measurement NOMs**

NOM-034-SEMARNAT-1993. This NOM establishes measurement methods to determine carbon monoxide concentrations in ambient air and the procedures for calibrating monitoring equipment.

NOM-035-SEMARNAT-1993. This NOM establishes measurement methods for determining the concentration of total suspended particulate matter in the atmosphere and for calibrating measurement equipment.

NOM-036-SEMARNAT-1993. This NOM establishes measurement methods for determining ozone concentrations in ambient air and for calibrating monitoring equipment.

NOM-037-SEMARNAT-1993. This NOM establishes measurement methods for determining nitrogen dioxide concentrations in ambient air and for calibrating monitoring equipment.

NOM-038-SEMARNAT-1993. This NOM establishes measurement methods for determining the concentration of sulfur dioxide in air and for calibrating the equipment.

Source: Agreement by Which the Nomenclature of 58 Official Mexican NOMs is Changed, Mexican National Institute of Ecology.

Table 3-2

Particulate Emission Standards for Stationary Sources

Exhaust Gas Flow Rate (m³/minute)	Maximum Emission Levels In Critical Zones (mg/m³)	Maximum Emission Levels for the Rest of the Country (mg/m³)
5	1536	2304
10	1148	1722
20	858	1287
30	724	1086
40	641	962
50	584	876
60	541	811
80	479	719
100	437	655
200	326	489
500	222	333
800	182	273
1000	166	249
3000	105	157
5000	84	127
8000	69	104
10000	63	95
20000	47	71
30000	40	60
50000	32	48

Notes: The interpolation and extrapolation of data not contained in this table can be obtained by applying the following equations:

$$E = \frac{3020}{C^{0.42}}$$

for critical zones:

$$E = \frac{4529.7}{C^{0.42}}$$

for the rest of the country:

Where:

E = the maximum permissible level in milligrams per cubic meter; and

C = gas flow rate in normal cubic meters per minute.

"Critical Zones" are the Metropolitan Zones of Mexico City, Monterrey and Guadalajara; the population centers of Coatzacoalcos-Minatitlan (State of Veracruz), Irapuato-Celaya-Salamanca (State of Guanajuato), Tula-Vito-Asasco (states of Hidalgo and Mexico); the Industrial Corridor of Tampico-Madero-Altamira (State of Tamaulipas), and the North Frontier Zone.

"Metropolitan Zone of Guadalajara" is the area made up of the following cities in the State of Jalisco: Guadalajara, Ixtlahuacan del Rio, Tlaquepaque, Tonalá, Zapotlanejo, and Zapopan.

"Metropolitan Zone of Mexico City" consists of the 16 Political Delegations of the Federal District and the following 17 cities in the State of Mexico: Atizapan de Zaragoza, Coacalco, Cuautitlan de Romero Rubio, Cuautitlan Izcalli, Chalco de Covarrubias, Chimalhuacan, Ecatepec, Huixquilucan, Ixtapaluca, La Paz, Naucalpan de Juarez, Nezahualcoyotl, San Vicente Chicoloapan, Nicolas Romero, Tecamac, Tlalnepantla, and Tultitlan.

"Metropolitan Zone of Monterrey" is the area made up of the following cities in the State of Nuevo Leon: Monterrey, Apodaca, General Escobedo, Guadalupe, San Nicolas de los Garza, San Pedro Garza Garcia, Santa Catarina, and Juarez.

"Normal" refers to a temperature of 298 degrees Kelvin (25 degrees Celsius) and pressure of 101,325 pascals (760 millimeter of mercury), on a dry basis.

"North Frontier Zone" is the area extending to 100 kilometers south of the U.S.-Mexican border.

Source: NOM-043-SEMARNAT-1993, Table 1.

Table 3-3**Regional SO₂ Emissions Values**

REGION	SO₂ Emissions (Kg/10⁶ Kcal)
Metropolitan Zone of Mexico City	0.36
Critical Zones	1.44

Source: NOM-085-SEMARNAT-1994, Table 2.

Table 3-4

Emission Limits as of January 1, 1998

Combustion Equipment Capacity MJ/h	Type of Fuel Used	Density of Smoke	Particulates (PST) mg/m ³ (kg/10 ⁶ kcal) (1) (2)			Sulfur Dioxide ppm V (kg/10 ⁶ kcal) (1) (2)			Nitrogen Oxides ppm V (kg/10 ⁶ kcal) (1)			Excess of Combustion % of volume (5)
		Number of stain and opacity	ZMCM	ZC (3)	RP	ZMCM	ZC (3)	RP	ZMCM	ZC (4)	RP	
Up to 5,250	Heavy oil or gas-oil	3	NA	NA	NA	550 (2.04)	1,100 (4.08)	2,200 (8.16)	NA	NA	NA	50
	Other liquids	2	NA	NA	NA	550 (2.04)	1,100 (4.08)	2,200 (8.16)	NA	NA	NA	
	Gaseous fuels	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	
From 5,250 to 43,000	Liquids	NA	75 (0.106)	350 (0.497)	450 (0.639)	550 (2.04)	1,100 (4.08)	2,200 (8.16)	190 (0.507)	190 (0.507)	375 (1.0)	40
	Gaseous fuels	NA	NA	NA	NA	NA	NA	NA	190 (0.486)	190 (0.486)	375 (0.959)	
From 43,000 to 110,000	Liquids	NA	60 (0.085)	300 (0.426)	400 (0.568)	550 (2.04)	1,100 (4.08)	2,200 (8.16)	110 (0.294)	110 (0.294)	375 (1.0)	30
	Gaseous fuels	NA	NA	NA	NA	NA	NA	NA	110 (0.281)	110 (0.281)	375 (0.959)	
Exceeding 110,000	Solids	NA	60 (0.090)	250 (0.375)	350 (0.525)	550 (2.16)	1100 (4.31)	2200 (8.16)	110 (0.309)	110 (0.309)	375 (1.052)	25
	Liquids	NA	60 (0.085)	250 (0.355)	350 (0.497)	550 (2.04)	1100 (4.08)	2200 (8.16)	110 (0.294)	110 (0.294)	375 (1.0)	
	Gaseous	NA	NA	NA	NA	NA	NA	NA	110 (0.281)	110 (0.281)	375 (0.959)	

Notes:

(1) Concentrations at 25°C, 760 mm Hg, 5% oxygen of the volume and in dry form. The equivalent concentration in kg/106 kcal is expressed in the parentheses. The factor to correct O2 with a 5% volume of oxygen is calculated in accordance with Equation 7 of [NOM-085-SEMARNAT-1994](#), which can be accessed at the following weblink: (last accessed in February 2010) http://www.semarnat.gob.mx/leyesynormas/Normas%20Oficiales%20Mexicanas%20vigentes/NOM_085_DOE.pdf.

(2) The particulate emission, sulfur dioxide and nitrogen oxide values can be determined with weighted averages of emissions from a fixed source, by using the procedure described in point 5.2 of [NOM-085-SEMARNAT-1994](#), see: http://www.semarnat.gob.mx/leyesynormas/Normas%20Oficiales%20Mexicanas%20vigentes/NOM_085_DOE.pdf, last accessed in February 2010.

(3) Critical Zones (as defined in the Subsection entitled, "Combustion Equipment - Federal").

(4) Refers solely to the metropolitan zones of the cities of Monterrey and Guadalajara and the cities of Tijuana, Baja California and Ciudad Juárez, Chihuahua.

(5) Determined using the following equation and measurements taken prior to pre-heating the air or any infiltration that dilutes the combustion gases:

$$EA = (O_2 - 0.5 CO) 100 / (0.264 N_2 - O_2 + 0.5 CO);$$

Where O_2 , CO and N_2 correspond to the percent in volume of oxygen, carbon monoxide and nitrogen oxide, respectively, contained in the combustion gases in dry form.

Table Key:

ZC = Critical Zones

NA = Not Applicable

ZMCM = Metropolitan Zones in Mexico City

RP = Rest of the Country

Source: NOM-085-SEMARNAT-1994, Table 5.

Table 3-5

Measurement and Analysis of Combustion Gases

Combustion Equipment Capacity MJ/h	Parameter	Minimum Monitoring Frequency	Type of Evaluation (1)	Type of Fuel
Up to 5,250	Smoke Density	Once every 3 months	Point (3 samples); Soot stain	Liquid and Gas
	CO ₂ , CO, O ₂ , N ₂	Once every 3 months	Point (3 samples); see Annex 3 of NOM-085-SEMARNAT-1994	Liquid and Gas
	SO ₂	Once every 3 months	Indirect measurement through quality certificates of fuels that the supplier provides.	Liquid
From 5,250 to 43,000	Total Suspended Particulates	Once per year	Isocinetiic (minimum during 60 minutes); 2 definitive samples (2)	Liquid
	NO _x	Once per year	Continuous (4); chemical luminescence or equivalent	Liquid and Gas
	SO ₂	Once per year	Indirect measurement through quality certificates of fuels that the supplier provides.	Liquid
	CO ₂ , CO, O ₂ , N ₂	Daily	Point (3 samples); see Annex 3 of NOM-085-SEMARNAT-1994	Liquid and Gas
From 43,000 to 110,000	Total Suspended Particulates	Once per year	Isocinetiic (minimum during 60 minutes); 2 definitive samples (2)	Liquid
	NO _x	Once every 6 months	Continuous (4); chemical luminescence or equivalent	Liquid and Gas
	SO ₂	Once per year	Indirect measurement through quality certificates of fuels that the supplier provides.	Liquid
	CO ₂ , CO, O ₂ , N ₂	Once per shift	Point (3 samples); see Annex 3 of NOM-085-SEMARNAT-1994	Liquid and Gas

Combustion Equipment Capacity MJ/h	Parameter	Minimum Monitoring Frequency	Type of Evaluation (1)	Type of Fuel
Greater than 110,000	Total Suspended Particulates	Once every 6 months	Isocinetetic (minimum during 60 minutes); 2 definitive samples (2)	Solid, Liquid
	NO _x	Permanent (3)	Continuous (4); chemical luminescence or equivalent	Solid, Liquid and Gas
	O ₂	Permanent	Continuous; magnetic field or equivalent, with a register as minimum or equivalent	Liquid and Gas
	SO ₂	Once per year	Indirect measurement through quality certificates of fuels, that the supplier provides	Solid, Liquid

Notes:

(1) See 6.1.1.4 of [NOM-085-SEMARNAT-1994](#) for more information on acceptable equivalent analysis methods, available at http://www.semarnat.gob.mx/leyesynormas/Normas%20Oficiales%20Mexicanas%20vigentes/NOM_085_DOI.pdf, last accessed in February 2010.

(2) See 6.1.1.5 of [NOM-085-SEMARNAT-1994](#).

(3) The monitoring of NO_x must: be continuous in the metropolitan zones of Mexico City, Guadalajara and Monterrey; last at least 7 days: and take place once every 3 months in Critical Zones; and take place once every 6 months in the rest of the country.

(4) See definitions at the beginning this protocol section (referencing Article 4) for definition of “continuous monitoring.”

The measurements specified in Table 6 of [NOM-085-SEMARNAT-1994](#) for industrial heating equipment, regardless of heating capacity, must be taken twice each year, in October and January.

Source: NOM-085-SEMARNAT-1994, Table 6.

Table 3-6

Maximum Permitted Levels of Pollutants into the Atmosphere from the Chemical Recovery Processes of Sulfate Pulp (Kraft) Manufacturing Plants

Process and Completion Period	Existing Plants				New Source	
	Particulate mg/m ³ (2)		TRS as H ₂ S mg/m ³ (2)		Particulates mg/m ³ (2)	TRS as H ₂ S mg/m ³ (2)
	Levels				150	56
	I	II	I	II		
Recovery Furnace (1)	500	350	279	70		
Lime Furnace	600	420	223	70	180	56
Completion/ Compliance Period/Date	November 15, 2001 (5 years after validity date of NOM)	November 15, 2002 (6 years after validity date of NOM)	After November 15, 2001 (5 years after validity date of NOM)	After November 15, 2002 (6 years after validity date of NOM)	After November 15, 1996	

Notes:

(1) The recovery furnace includes the direct contact evaporator, if any.

(2) Emissions values expressed in mg/m³ must be calculated on a dry basis and under standardized conditions, corrected to 8% of oxygen by volume for the recovery furnace and 10% of oxygen by volume for the lime furnace.

Source: NOM-105-SEMARNAT-1996, Table 1.

Table 3-7

**Maximum Permitted Levels of Emissions of Pollutants into the Atmosphere from the
Chemical Recovery Processes of Soda Pulp Manufacturing Plants**

Process and Completion Period	Particulates mg/m ³ (2)		
	Existing plants		New Sources
	Levels		
	I	II	
Recovery Furnace (1)	500	350	150
Lime Furnace	600	420	180
Completion Period	After November 15, 2001 (5 years after validity date of the NOM).	After November 15, 2002 (After the 6 th year of validity of the NOM)	After November 15, 1996 (After validity of the NOM)

Notes:

(1) The recovery furnace includes the direct contact evaporator, if any.

(2) The maximum allowable emission of pollutants into the atmosphere expressed in mg/m³ must be calculated on a dry basis and under standardized conditions, corrected to 8% of oxygen by volume for the recovery furnace and 10% of oxygen by volume for the lime furnace.

Source: NOM-105-SEMARNAT-1996, Table 2.

Table 3-8

**Specifications for Measuring and Analyzing Emissions of Pollutants into the
Atmosphere Deriving From the Chemical Recovery Processes of
Sulfate and Soda Pulp Manufacturing Plants**

Equipment or Process	Parameter	Minimum Measurement Frequency	Measurement Type
Recovery Furnace and Process	TSP	Once per Year	Isokinetic, 2 Final Samples
	TRS	Once per Year	Continual monitoring, Methods 16, 16A, or 16B of the EPA or equivalent
	O ₂	Once per Year	Continual monitoring, magnetic field or equivalent

Notes:

- TRS = total reduced sulfur.
- TSP = total solid particulates.
- “Continual monitoring” is monitoring carried out using automated equipment for no less than 60 minutes and no more than 360 minutes, with a minimum of 15 readings during the measurement. The result of the continual monitoring is the average for the sampled period.
- “Recovery furnace” is equipment used in the reactive process of the recovery area of a pulp plant to burn organic components of the waste liquor in pulp production and to recover inorganic components for re-circulation into the process.

Source: NOM-105-SEMARNAT-1996, Table 3.

Table 3-9**VOC Limits for Existing Sources of Coating Operations**

Type of Vehicle	Maximum permissible limits of VOCs in g/m²
Automobiles	55
Multiple-use passenger and utility vehicles	60
Multiple-use cargo and light-duty trucks/vehicles	75

Source: NOM-121-SEMARNAT-1997, Table 1.

Table 3-10**VOC Limits for New Sources of Coating Operations**

Type of Vehicle	Maximum permissible limits of VOCs in g/m²
Automobiles	55
Multiple-use passenger and utility vehicles	60
Multiple-use cargo and light-duty trucks/vehicles	75

Source: NOM-121-SEMARNAT-1997, Table 2.

Table 3-11**Maximum Allowable Levels for Existing Sulfuric Acid Plants****Part A - Plants Located within Critical Zones:**

Plant Capacity (ton/day)	kg of Sulfur Dioxide/ton of Sulfuric Acid (100%)
1 - 500	17.5
501 - 700	13.0
701 - 1000	9.0
> 1000	4.0

Part B - Plants Located Within All Other Areas of the Country:

Plant Capacity (ton/day)	kg of Sulfur Dioxide/ton of Sulfuric Acid (100%)
1 - 500	28.0
501 - 700	20.0
701 - 1000	14.0
> 1000	7.0

Source: NOM-039-SEMARNAT-1993, Tables 1 and 2.

Table 3-12**Maximum Permissible Emission Levels for Waste Incineration Installations**

Contaminant	Emission Limits	Measurement Frequency	Applicable Standard or Method
CO (mg/m ³)	63	Continuous	Nondispersive infrared and electrochemical cell Annex 1
HCl (mg/m ³)	15	Quarterly (every 3 months)	NMX-AA-070-1980
NOx (mg/m ³)	300	Biannual (every 6 months)	Chemiluminescence Annex 2
SO ₂ (mg/m ³)	80	Biannual (every 6 months)	NMX-AA-55-1979
Particulates (mg/m ³)	50	SEMESTRAL / Biannual (every 6 months)	NMX-AA-10-SCFI-2001
Arsenic Selenium COBACobalt Nickel Manganese Tin (mg/m ³)	0.7*	Biannual (every 6 months)	Atomic Absorption Spectrometry. Annexes 3 and 4
Cadmium (mg/m ³)	0.07	Biannual (every 6 months)	Atomic Absorption Spectrometry. Annexes 3 and 4
Lead Total Chromium Copper Zinc (mg/m ³)	0.7*	Biannual (every 6 months)	Atomic Absorption Spectrometry. Annexes 3 and 4
Mercury (mg/m ³)	0.07	Biannual (every 6 months)	Atomic Absorption Spectrometry with Cold Vapor Annexes 3 and 4
Dioxins and Furans TE (toxic equivalent) New incineration installations	0.2	Annual	Gas chromatography coupled with High Resolution Mass Spectrometry Annex 5A

Contaminant	Emission Limits	Measurement Frequency	Applicable Standard or Method
Dioxins and Furans TE (toxic equivalent) Incineration installations existing before the publication of NOM-098-SEMARNAT-2002 (i.e., existing before October 1, 2004).	0.5	Annual	Gas chromatography coupled with Low Resolution Mass Spectrometry Annex 5B

Notes:

All values are referred to at Standard conditions: 1 atmosphere, dry base, 25°C and 7% Oxygen, in accordance with [NOM-085-SEMARNAT-1994](#).

* Total sum of heavy metals.

** All measurement results must be recorded in a log book. <RECORD KEEPING>

Source: NOM-098-SEMARNAT-2002, Table 1.

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is provided for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter format does not contain the electronic links and other functionality contained in the MS Word version. The following instructions pertain to the fully linked Word version of the AQC.

Each question from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, electronic links back to the original protocol document are provided for quick access to this information when needed. To return to where you were in the AQC after following a link, use the back arrow located on the Audit Quick Check Toolbar.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X's to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

Additional audit questions can be added to the end of the AQC. Examples might include corporate requirements or best management practices. To add more questions, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Continue to sequentially number the questions by putting your cursor in the first column and typing the desired number.

Please Note: Additional rows will be included in the sort function. It is important that you number the questions for the sort functions to work. Please consider the following sort rules when entering custom text.

Sorting Responses

The AQC sort feature is accessed from the IAPC menu item located on the far right on the Main MS Toolbar. Please note the following criteria to take full advantage of this feature.

You can change the column titles as you see fit, but the menus assume that:

- the first column contains the question number and question text;
- the second column is "Not Applicable" (N/A) entries;
- the third column is "Complies" entries; and
- the fourth column is "Does Not Comply" entries.

A question is considered "Complies" if there is any text ("X" or "YES", for instance) in the "Complies" column.

A question is considered "Incomplete" if columns 2 to 4 are all empty.

Only one column should contain a value for any given question.

Click the IAPC menu item and then select one of the following menu choices:

Sort by Question Number

- Sorts the section by question number

Sort with Incomplete first

- Sorts the section with Incomplete first, Does Not Comply next, Complies next, then N/A

Sort with Non-compliant first

- Sorts the section with Does Not Comply first, Complies next, N/A next, then Incomplete

Sort with Compliant first

- Sort the section with Complies items first, Does Not Comply next, N/A next, then Incomplete

Sort with Not Applicable last

- Sort the section with not-applicable items last (Complies first, Does Not Comply next, Incomplete next, then N/A)

For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click the IAPC menu item and choose "Sort with Non-compliant first". Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

Once the completed AQC is sorted, save or print a copy of the results. The AQC can then be re-sorted using a different option.

Section 3 Audit Quick Check

SECTION 3.0 AIR EMISSIONS

AUDIT QUICK CHECK

SITE: _____ DATE: _____

ASSESSOR: _____

	Not Applicable	Complies	Does Not Comply
Q3.1 If the facility emits odors, gases, or solid or liquid particulate matter, has it obtained an operating license or a LAU/Unique Environmental License (see the Subsection the entitled, "Environmental Operating Licenses, Unique Environmental Licenses, and Annual Environmental Reporting" in Section 2.0 of this protocol) issued by the Ministry of Environment and Natural Resources ("SEMARNAT")? [<i>Air Regulation, Articles 18 and 19</i>] See protocol for notes. I. Authorizations Comments:			
Q3.2 If the facility holds an operating license or LAU, does it meet all conditions established in the license, including emissions limitations? [<i>Air Regulation, Article 20</i>] I. Authorizations Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.3 If the facility conducts open air burning, does it obtain authorization from SEMARNAT at least 10 days prior to conducting the burning? [<i>Air Regulation, Article 27</i>] See protocol for notes. I. Authorizations Comments:			
Q3.4 If the facility has any fixed emission sources subject to federal jurisdiction (as addressed in the note to Question 3.1), has it installed air emissions sampling ports and platforms? [<i>Air Regulation, Article 17, subpart III</i>] See protocol for notes. II. Emissions Monitoring Comments:			
Q3.5 Does the facility maintain the sampling ports and platforms in safe conditions? [<i>Air Regulation, Article 26</i>] See protocol for notes. II. Emissions Monitoring Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.6 Does the facility calibrate the sampling measurement equipment that is installed on the sampling ports and platforms? [<i>Air Regulation, Article 26</i>] II. Emissions Monitoring Comments:			
Q3.7 Has the facility conducted perimeter monitoring for the contaminants in its emissions? [<i>Air Regulation, Article 17, subpart V</i>] See protocol for notes. II. Emissions Monitoring Comments:			
Q3.8 Are the emission sampling and measurement methods used consistent with the specifications contained in the applicable NOMs? [<i>Air Regulation, Article 25</i>] See protocol for notes. II. Emissions Monitoring Comments:			
Q3.9 Do the facility's emissions enter the atmosphere only through ducts or stacks? [<i>Air Regulation, Article 23</i>] See protocol for notes. III. Emission Controls - General Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.10 Are the emission ducts or stacks high enough to achieve adequate dispersion, as specified in the NOMs? [<i>Air Regulation, Article 24</i>] See protocol for notes. III. Emission Controls - General Comments:			
Q3.11 If the facility emits particulate matter, does it comply with the particulate emission standards set forth in Table 3-2? [<i>NOM-043-SEMARNAT-1993, Article 5.2</i>] III. Emission Controls - General Comments:			
Q3.12 If the facility has any fixed source combustion equipment with an hourly energy consumption that exceeds 43,000 MJ/h, does it demonstrate compliance with its total sulfur dioxide emission levels by obtaining emissions certifications for these emissions (assigned based on the regional levels set forth in Table 3-3)? [<i>NOM-085-SEMARNAT-1994, Article 5.3</i>] IV. Combustion Equipment - Federal Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.13 If the facility operates any fixed source combustion equipment, does it ensure emissions do not exceed the maximum permissible limits for smoke, total suspended particulates, nitrogen oxide and sulfur dioxide specified in Table 3-4? [<i>NOM-085-SEMARNAT-1994, Articles 5.1</i>] See protocol for notes. IV. Combustion Equipment - Federal Comments:			
Q3.14 If the facility has any continuous process combustion equipment that uses solid or liquid fuels, does it ensure that the blow-down/purging process is conducted at least once a shift or in accordance with the manufacturer's specifications? [<i>NOM-085-SEMARNAT-1994, Article 5.5</i>] See protocol for notes. IV. Combustion Equipment - Federal Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.15 With regard to any fixed source combustion equipment, does the facility keep an operation and maintenance log for all measurements and analyses of emissions, and the quality certificates of the fuel consumed, and does the log include the following: [NOM-085-SEMARNAT-1994, Article 6.1] <RECORD KEEPING> – Information pertaining to management of the operation (“control de operación”): date, shift, time of report, combustion temperature and pressure, color of smoke, background purge, level purge, safety valve condition, and consumption of fuel; – Information pertaining to monitoring controls: pressure level, water supply pump start and stop mechanisms, stoppage of operations due to extinguishing of flame; and – Information pertaining to management of emission contaminants: efficiency, gas temperature, excess air, O₂, CO₂, smoke opacity, data on fuel used in accordance with a certificate, emission analysis conducted in accordance with the conditions set forth in Table 3-5? See protocol for notes. IV. Combustion Equipment - Federal Comments:			
Q3.16 If the facility conducts any operations involving chemical recovery processes used in sulfate and soda pulp manufacturing, does it comply with the following emission limits: [NOM-105-SEMARNAT-1996, Article 4] – For chemical recovery processes of sulfate pulp (Kraft) mills, the limits specified in Table 3-6; and – For chemical recovery processes of soda pulp manufacturing plants, the limits specified in Table 3-7? V. Chemical Recovery Process of Pulp Manufacturing Plants Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.17 If the facility conducts any operations involving chemical recovery processes used in pulp manufacturing, does it comply with the pollutant emission measurement and analysis requirements specified in Table 3-8? [NOM-105-SEMARNAT-1996, Article 4] V. Chemical Recovery Process of Pulp Manufacturing Plants Comments:			
Q3.18 If the facility conducts any operations involving in-plant coating operations of automobiles, multiple-use passenger and utility vehicles, or cargo and light-duty trucks, does it comply with the following VOC emission limits: [NOM-121-SEMARNAT-1997, Article 4.1] – If the facility is an existing source, the limits specified in Table 3-9; and – If the facility is a new source, the limits specified in Table 3-10? VI. VOC Emissions from Automotive Coating Operations Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.19 If the facility conducts any operations involving in-plant coating operations of automobiles, multiple-use passenger and utility vehicles, cargo and light-duty trucks, does it comply with the following requirements: [NOM-121-SEMARNAT-1997, Article 4.3] – Keeps a log book for recording the maintenance of all processes and control equipment; <RECORD KEEPING> – Keeps a monthly record of VOC consumption of all body coating operations, including the following data: <RECORD KEEPING> – Number and type of coated bodies; – Consumption of paint by color and VOC content; and – Consumption by type of solvent used; – Determines the surface areas of the bodies; and – Calculates the emissions of VOCs? See protocol for notes. VI. VOC Emissions from Automotive Coating Operations Comments:			
Q3.20 If the facility is an oil refinery and utilizes an oil-water separator, are at least 95% of VOC emissions controlled by the use of a fixed or floating cover? [NOM-075-SEMARNAT-1995, Article 4.1] VII. Oil Refineries - VOC and Sulfur Recovery Requirements Comments:			

		Not Applicable	Complies	Does Not Comply
Q3.21	Does the facility ensure that all emissions from the petroleum refining process, and from the associated desulfurization processes containing sulfur compounds are treated to recover the sulfur and reduce the emission of contaminants to the atmosphere? [<i>NOM-148-SEMARNAT-2006, Article 4.1</i>] See protocol for notes. VII. Oil Refineries - VOC and Sulfur Recovery Requirements Comments:			
Q3.22	If the facility has or is a petroleum refinery that was installed after February 28, 2008 (enforcement date of <i>NOM-148-SEMARNAT-2006</i>), does it ensure that the sulfur recovery rate is greater than or equal 95%? [<i>NOM-148-SEMARNAT-2006, Article 4.4</i>] VII. Oil Refineries - VOC and Sulfur Recovery Requirements Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.23 If the facility has or is a petroleum refinery, does it determine and record the sulfur recovery rate and the information necessary to calculate this rate in its air emissions logbook (see Question 3.55), including the following information: [NOM-148-SEMARNAT-2006, Article 4.5] <RECORD KEEPING> – Specific date, volume and weight of the crude oil and other inputs processed daily and their total sulfur (S_T); – Specific volume and weight of different petroleum products produced daily and the sulfur in products (S_P); – Recovered sulfur (S_R); – Sulfur to burners and thermal oxidizers (S_O); and – Sulfur sent to market with the corresponding remission notes (“notas de remisión”)? See protocol for notes. VII. Oil Refineries - VOC and Sulfur Recovery Requirements Comments:			
Q3.24 Does the facility ensure that it reports the total sulfur dioxide emissions and the sulfur recovery rate in its COA annual environmental report (as addressed in the Subsection entitled, “General Record Keeping/Reporting - Fixed and Mobile Sources,” and in Section 2.0 of this protocol, in the Subsection entitled, “Environmental Operating Licenses, Unique Environmental Licenses, and Annual Environmental Reporting”) [NOM-148-SEMARNAT-2006, Article 4.6] VII. Oil Refineries - VOC and Sulfur Recovery Requirements Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.25 Are sulfur dioxide emissions from <u>existing</u> facilities that are located within Critical Zones below the maximum allowable levels specified in Part A of Table 3-11? [NOM-039-SEMARNAT-1993, Article 5.2] See protocol for notes. VIII. Sulfuric Acid Manufacturing Facilities Comments:			
Q3.26 Are sulfur dioxide emissions from <u>existing</u> facilities that are located in all other areas of the country (i.e., not located in Critical Zones) below the maximum allowable levels specified in Part B of Table 3-11? [NOM-039-SEMARNAT-1993, Article 5.2] VIII. Sulfuric Acid Manufacturing Facilities Comments:			
Q3.27 Are the hourly average sulfur dioxide emissions, measured within the property limits of the facility, less than the following maximum allowable levels: [NOM-039-SEMARNAT-1993, Article 5.2.1] – For facilities located within Critical Zones, 0.234 ppm; or – For facilities located in other areas of the country, 0.3 ppm? VIII. Sulfuric Acid Manufacturing Facilities Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.28 Are sulfur dioxide emissions from <u>new</u> facilities less than the following maximum allowable emissions limits: [NOM-039-SEMARNAT-1993, Article 5.3] – For facilities with sulfuric acid production capacities between 1 and 500 tons/day, 13.0 kilograms sulfur dioxide per ton of sulfuric acid (100%); or – For facilities with sulfuric acid production capacities exceeding 500 tons/day, 3.0 kilograms sulfur dioxide per ton of sulfuric acid (100%)? VIII. Sulfuric Acid Manufacturing Facilities Comments:			
Q3.29 For both existing and new facilities, are emissions of sulfur trioxide and sulfuric acid mist less than 1/1,000 of the facility's production volume? [NOM-039-SEMARNAT-1993, Article 5.4] VIII. Sulfuric Acid Manufacturing Facilities Comments:			
Q3.30 Are emissions from <u>existing</u> facilities below the following maximum allowable levels: [NOM-046-SEMARNAT-1993, Article 5.1, Table 1] – Less than 3.0 grams sulfur dioxide per kilograms of dodecylbenzenesulfonic acid produced (100%); and – Less than 1.2 grams sulfur trioxide mist and sulfuric acid (expressed as dodecylbenzenesulfonic acid) per kilogram of dodecylbenzenesulfonic acid produced (100%)? IX. Dodecylbenzenesulfonic Acid Manufacturing Plants Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.31 Are emissions from <u>new</u> facilities below the following maximum allowable levels: [NOM-046-SEMARNAT-1993, Article 5.1, Table 1] – Less than 2.0 grams sulfur dioxide per kilogram of dodecylbenzenesulfonic acid produced (100%); and – Less than 1.2 grams sulfur trioxide mist and sulfuric acid (expressed as dodecylbenzenesulfonic acid) per kilogram of dodecylbenzenesulfonic acid produced (100%)? IX. Dodecylbenzenesulfonic Acid Manufacturing Plants Comments:			
Q3.32 Are nitrogen oxide emissions from glass manufacturing processes within the maximum permissible limits specified in Tables 1, 2, and 3 of NOM-097-SEMARNAT-1995, as provided in Appendix 3-B? [NOM-097-SEMARNAT-1995, Article 4.2] See protocol for notes. X. Glass Manufacturing Processes Comments:			
Q3.33 Does the facility ensure that any ovens that have a production capacity of 100 tons of melted glass/day and that are located within Critical Zones are equipped with continuous monitoring systems for nitrogen oxides? [NOM-097-SEMARNAT-1995, Article 4.8] X. Glass Manufacturing Processes Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.34 Are nitrogen oxide emissions monitored as a function of the concentration of O₂ and CO and recorded daily in the facility's operation log book? [NOM-097-SEMARNAT-1995, Article 4.8] <RECORD KEEPING> X. Glass Manufacturing Processes Comments:			
Q3.35 If the facility is located in an area other than a Critical Zone and it utilizes ovens with capacities of fewer than 100 tons/day, are nitrogen oxide emissions evaluated at least every 6 months? [NOM-097-SEMARNAT-1995, Article 4.9] X. Glass Manufacturing Processes Comments:			
Q3.36 Does the facility evaluate particulate matter emissions from process ovens every 6 months? [NOM-097-SEMARNAT-1995, Article 4.10] X. Glass Manufacturing Processes Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.37 Has the facility prepared source emission compliance reports that include the following information: <i>[NOM-097-SEMARNAT-1995, Article 4.11]</i> – The stack emissions parameters; – The source operating temperature during monitoring; – The volume and type of fuel at 20°C or 1 kg/cm²; – The percentage of recycled glass (cullet) processed; and – The type of glass and/or processed product manufactured? See protocol for notes. X. Glass Manufacturing Processes Comments:			
Q3.38 If the facility manufactures hydraulic cement using conventional fuels or mixtures with other materials or wastes that are used as fuels, does it comply with the applicable limitations and requirements set forth in Appendix 3-C? <i>[NOM-040-SEMARNAT-2002, Article 4]</i> XI. Cement Manufacturing Operations Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.39 If the facility manufactures hydraulic cement in the manner described in Question 3.38 and it exceeds the maximum permissible emissions levels established in Tables 1 and 2 in Appendix 3-C, does it ensure the following: [NOM-040-SEMARNAT-2002, Articles 4.12 and 4.13] – The exceedances only occur temporarily during the initial start-up of the combustion equipment; or – The exceedances only occur temporarily during the reheating of the oven or furnace for operational reasons; and – The duration and conditions of the operations during these exceeded levels are recorded in a log book? <RECORD KEEPING> XI. Cement Manufacturing Operations Comments:			
Q3.40 Does the facility ensure that any existing, new or modified plants used for the desulfurization of sour gases and condensates control their sulfur-containing emissions in accordance with the notes to this question, and that the emissions are monitored continuously? [NOM-137-SEMARNAT-2003, Article 5.1] See protocol for notes. See protocol for table. See protocol for note. XII. Desulfurizing Plants Comments:			

		Not Applicable	Complies	Does Not Comply
Q3.41	Does the facility ensure that the concentration of hydrogen sulfide in the exit gases of the stack is less than or equal to 10 ppm by volume? [<i>NOM-137-SEMARNAT-2003, Article 6.1</i>] XII. Desulfurizing Plants Comments:			
Q3.42	Does the facility keep a log book for the operation and maintenance for each desulfurization plant, and does it ensure that the log book remains in the work place for a minimum period of five years? [<i>NOM-137-SEMARNAT-2003, Article 6.2</i>] <RECORD KEEPING> See protocol for notes. XII. Desulfurizing Plants Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.43 At a minimum, is the following information recorded in the log book: [NOM-137-SEMARNAT-2003, Articles 6.2.1, 6.2.2 and 6.2.3] <RECORD KEEPING> - Operational control: date, daily consumption of fuel in the thermal oxidizer, daily average operating temperature of the thermal oxidizer, determination every 24 hours of the volume in humid/wet base of the incoming acidic gas (millions of cubic feet per day, "MMPCD") at conditions of 1.0 kgf/cm² and 20 degrees Celsius, results of the daily concentration in mol of H₂S dry base, daily concentration of sulfur compounds in the flue/tail gas, and records of the calculations of quarterly ("trimestral") efficiency and averages; - Contaminating emissions control: daily average of the following parameters: sulfur dioxide concentration and volumetric flow of the exit gases of the thermal oxidizer; mass emission in tons/day of sulfur dioxide (E (SO₂); and calculations of quarterly averages; and - Maintenance control: modifications to the critical equipment: blower; thermal reactor; condensers; thermal oxidizer; control systems; and catalyzer? XII. Desulfurizing Plants Comments:			
Q3.44 Does the facility ensure that continuous sulfur dioxide monitoring equipment is installed and maintained in good condition? [NOM-137-SEMARNAT-2003, Article 6.3] See protocol for notes. XII. Desulfurizing Plants Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.45 If the facility operates a waste incinerator, does it comply with the following requirements: [NOM-098-SEMARNAT-2002, Articles 9.1 through 9.5] – The emission limits set forth in Table 3-12; See protocol for notes. – When using dry scrubbers (“lavadores secos”), the maximum temperature of the emission gases at the point prior to the emissions control equipment is less than 250°C; – When dry scrubbers are not used, the temperature of gases at the point of emission from the incinerator stack does not exceed 250°C; – If the continuous monitoring equipment is out of service, the following requirements are met: – A daily grab sample is taken until the continuous monitoring equipment is put back into service; and See protocol for notes. – SEMARNAT is immediately notified that the continuous monitoring equipment is out of service and of the expected time before it returns to service, and the facility complies with any conditions specified by SEMARNAT? XIII. Waste Incineration Requirements - Emission Levels Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.46 If the facility operates a waste incinerator, does it maintain a daily record (either in a bound log book or an electronic database) that is available for review by the Attorney General's Office of Environmental Protection (Procuraduría Federal de Protección al Ambiente, or PROFEPA), with the following information: [NOM-098-SEMARNAT-2002, Article 7.9] <RECORD KEEPING> – Results of monitoring for the contaminants specified in Table 3-12; and – An indication of the location of the monitoring records ("registros") if continuous measurements are conducted? See protocol for notes. XIII. Waste Incineration Requirements - Emission Levels Comments:			
Q3.47 Has the facility installed a vapor extraction system? [NOM-092-SEMARNAT-1995, Article 1.2] See protocol for notes. XIV. Gas Station Vapor Recovery Systems in Mexico Valley Comments:			
Q3.48 Does the facility ensure that tank trucks used for conducting the transfer of gasoline to the storage tanks have a Phase I vapor recovery system? [NOM-092-SEMARNAT-1995, Article 4.11] See protocol for notes. XIV. Gas Station Vapor Recovery Systems in Mexico Valley Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.49 Does the facility ensure that storage tanks are equipped with Phase I vapor recovery systems and are connected hermetically to the fuel supply devices and the vapor recovery devices during the transfer operation from the tanker truck? [NOM-092-SEMARNAT-1995, Article 4.12] XIV. Gas Station Vapor Recovery Systems in Mexico Valley Comments:			
Q3.50 Does the facility ensure that the transfer of gasoline to vehicles is carried out in a manner that ensures that the gasoline vapors generated are collected by a Phase II gasoline vapor recovery system? [NOM-092-SEMARNAT-1995, Article 4.13] XIV. Gas Station Vapor Recovery Systems in Mexico Valley Comments:			
Q3.51 Does the facility ensure that the hermetic seals of the tanks and piping are verified through a non-destructive test prior to installing the vapor recovery system? [NOM-092-SEMARNAT-1995, Article 4.14] XIV. Gas Station Vapor Recovery Systems in Mexico Valley Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.52 Does the facility ensure that a hermetic seal test and a test to detect any obstruction and verify the free passage of vapors are conducted prior to operating the vapor recovery system? [NOM-092-SEMARNAT-1995, Article 4.15] XIV. Gas Station Vapor Recovery Systems in Mexico Valley Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.53 Do installations equipped with Phase I and/or Phase II vapor recovery systems have signs that meet the following requirements: [NOM-092-SEMARNAT-1995, Article 4.17] – Are 60 x 40 cm; – Are constructed of a resistant material with a white background and with black lettering; – Are located above the walls and visible from the exterior of the building of the service station; and – Contain the following information: – Registration number of the service station, assigned by PEMEX (“Petróleos Mexicanos”); – Installation date of the vapor recovery system; – Capacity of the installation, including number of hoses available to pump gasoline, number of gasoline tanks, total capacity expressed in liters, and existence of vapor interconnections between tanks; – Registration number, make and model of the vapor recovery system; and – Registration number for training and approval of the entity in charge of the installation, the start-up, and the maintenance of the vapor recovery system? XIV. Gas Station Vapor Recovery Systems in Mexico Valley Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.54 If the facility has any fixed emission sources subject to federal jurisdiction (as defined in Question 3.1, does it complete and submit a COA Report ("Cédula de Operación Anual") between January 1 and April 30 of each year? [<i>Air Regulation, Articles 17, subpart II, 20 and 21</i>] and [<i>Decree Amending General Law, Article 2</i>] See protocol for notes. XVI. General Record Keeping/Reporting - Fixed and Mobile Sources Comments:			
Q3.55 Does the facility maintain a log book of the operation and maintenance of process equipment and air pollution control equipment? [<i>Air Regulation, Article 17, subpart IV</i>] <RECORD KEEPING> See protocol for notes. XVI. General Record Keeping/Reporting - Fixed and Mobile Sources Comments:			
Q3.56 Does the facility give SEMARNAT advance notice prior to re-starting operations following a scheduled shutdowns, or immediate notification in the case of unplanned shutdowns? [<i>Air Regulation, Article 17, subpart VII</i>] XVI. General Record Keeping/Reporting - Fixed and Mobile Sources Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.57 If the facility is an oil refinery and uses an oil-water separator, has it informed SEMARNAT of all major maintenance work schedules or equipment failures, and VOC emissions from the oil-water separator, including the time that is required for the equipment to be repaired? [<i>NOM-075-SEMARNAT-1995, Article 4.3</i>] See protocol for notes. XVI. General Record Keeping/Reporting - Fixed and Mobile Sources Comments:			
Q3.58 Does the facility provide immediate notification to SEMARNAT in the event of the failure of air pollution control equipment that may cause contamination? [<i>Air Regulation, Article 17, subpart VIII</i>] XVI. General Record Keeping/Reporting - Fixed and Mobile Sources Comments:			
Q3.59 If the facility has multiple emission point sources, does it include all of these sources when reporting its total emissions to SEMARNAT? [<i>Air Regulation, Article 25</i>] XVI. General Record Keeping/Reporting - Fixed and Mobile Sources Comments:			

	Not Applicable	Complies	Does Not Comply
Q3.60 Does the facility have a current emissions testing certificate for any gasoline combustion engine vehicles? [NOM-041-SEMARNAT-2006, Articles 1 and 6.4.3] <RECORD KEEPING> See protocol for notes. XVI. General Record Keeping/Reporting - Fixed and Mobile Sources Comments:			
Q3.61 Does the facility have a current emissions testing certificate for any diesel-powered combustion engine vehicles? [NOM-045-SEMARNAT-2006, Articles 1 and 7.1.3] <RECORD KEEPING> See protocol for notes. XVI. General Record Keeping/Reporting - Fixed and Mobile Sources Comments:			

4.0 SOLID AND HAZARDOUS WASTE

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

– I. General Waste Requirements [4-11](#)

– II. Storage and Disposal of Industrial Solid Waste [4-12](#)

– III. General Hazardous Waste Management..... [4-20](#)

– IV. Unwanted Dangerous Chemicals..... [4-24](#)

– V. Hazardous Waste Storage Areas..... [4-26](#)

– VI. Hazardous Waste Manifests [4-30](#)

– VII. Hazardous Waste Incineration [4-32](#)

– VIII. Hazardous Waste Landfills..... [4-35](#)

– IX. Medical Waste Management..... [4-41](#)

– X. Radioactive Waste Management [4-47](#)

– XI. Urban Radioactive Waste..... [4-50](#)

– XII. Other Industry-Specific Waste Management Requirements [4-52](#)

– XIII. Requirements for the Import of Solid and Hazardous Wastes [4-52](#)

– XIV. Transboundary Movement of Hazardous Wastes [4-54](#)

– XV. Control of Electronic Waste..... [4-56](#)

Tables or Appendices referenced in the protocol are located at the end of this section, along with a link to our audit scorecard, entitled Audit Quick Check. This protocol applies to facilities located throughout China.

Key Legislation and Regulations

Key legislation and regulations covered in this protocol are noted as follows:

- **Law of the People's Republic of China on Prevention and Control of Water Pollution** (中华人民共和国水污染防治法, 全国人民代表大会常务委员会), *May 11, 1984; last amended on February 28, 2008*. This Law, issued by the Standing Committee of the National People's Congress, sets forth wastewater discharge requirements for the purpose of preventing the pollution of surface water and groundwater. The Law is applicable to rivers, lakes, canals, water channels, reservoirs, groundwater, and other bodies of water within the People's Republic of China. This Law is not applicable to prevention and control of marine pollution, which is covered by the *Law of the People's Republic of China on Marine Environmental Protection*.
- **Provisions on Environmental Protection Design of Construction Projects** (国家计划委员会, 国务院环境保护委员会, 建设项目环境保护设计规定), *March 20, 1987*. These Provisions, issued by the State Planning Commission and National Environmental Protection Agency set forth requirements for the various design stages of construction projects for the purpose of controlling new pollution sources. The requirements covered in this section include certain controls that must be employed to eliminate or reduce waste discharges from industrial facilities.
- **Measures on Management of Urban Radioactive Waste** (城市放射性废物管理办法, 国家环境保护局), *July 16, 1987*. These Measures, issued by the State Environmental Protection Administration, set forth requirements relating to management of radioactive wastes and waste radioactive sources.
- **Rules Concerning Warehouse Safety and Fire Control** (仓库防火安全管理规则, 公安部), *April 10, 1990*. These Rules, issued by the Ministry of Public Security, set forth requirements for fire safety in product and chemical storage areas.
- **Regulation on the Management Concerning the Prevention and Control of Marine Environmental Damage Caused by Pollution from Coastal Construction Projects** (中华人民共和国防治海岸工程建设项目污染损害海洋环境管理条例, 国务院), *June 25, 1990; last amended on September 25, 2007*. This Regulation, issued by the State Council, contains rules for the storage of wastes in coastal areas. It also requires the use of pollution control equipment for certain types of operations located in such areas.

- **Quality Standard for Groundwater - GB/T 14848-93, State Bureau of Technical Supervision** (地下水质量标准, 国家技术监督局), *December 30, 1993*. This groundwater quality Standard, issued by the State Bureau of Technical Supervision, applies to Class II general industrial solid waste storage and disposal sites that require groundwater monitoring.
- **Circular on Reporting and Registering of Solid Wastes throughout China** (关于在全国开展固体废物申报登记工作的通知, 国家环境保护局), *July 1994*. This Circular, issued by the National Environmental Protection Agency, sets forth the types and amounts of solid waste that trigger the requirement to register with the local environmental protection department.
- **Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes** (中华人民共和国固体废物污染环境防治法, 全国人民代表大会常务委员会), *October 30, 1995; last amended on December 29, 2004*. This Law, issued by the Standing Committee of the National People's Congress, sets forth requirements related to the storage, collection, disposal, and import/export of solid waste. As compared with the previous version, this amended version includes gaseous-state material stored in containers as solid waste and sets forth more specific requirements for facilities that collect, store, transport, re-use or dispose of solid wastes. Requirements are added to cover breeding industries facilities that re-use hazardous wastes. The Law also establishes more stringent requirements relating to the generation and storage of solid and hazardous wastes.
- **Graphic Environmental Protection Signs for Pollution Discharge Outlets (Source) - GB 15562.1-95** (环境保护图形标志排放口(源), 国家环境保护局), *November 20, 1995*. This Standard, issued by the National Environmental Protection Agency, provides examples of obligatory warning signs for waste discharge outlets.
- **Graphical Signs for Environmental Protection - Solid Waste Storage (Disposal) Site - GB 15562.2-1995** (环境保护图形标志—固体废物贮存(处置)场, 国家环境保护局), *November 20, 1995*. This Standard, issued by the National Environmental Protection Agency, provides examples of obligatory waste storage area warning signs.
- **Classification of Radioactive Waste - GB 9133-1995** (放射性废物的分类, 国家环境保护局), *December 21, 1995*. This Standard classifies gaseous, liquid and solid radioactive wastes according to their radioactivity levels. It replaces the former *Standard GB 9133-88* of the same name.

- **Ambient Air Quality Standards - GB 3095-1996** (环境空气质量标准, 国家质量监督检验检疫总局, 国家环境保护局), *January 18, 1996; last amended on January 1, 2000*. This Standard, issued by the National Environmental Protection Agency and State Administration of Quality Supervision, Inspection and Quarantine, specifies ambient air quality standards, (including classifications) for air quality objective areas, standard levels, criteria pollutants, average periods, standard values, sampling and analysis methods, and validation methods of statistical data. The responsibility for achieving compliance with these requirements lies with the government's environmental enforcement agencies. Classifications specified in this Standard are in accordance with the [Integrated Emission Standard for Air Pollutants - GB 16297-1996](#).
- **Interim Provisions on the Environmental Protection Management of Waste Imports** (废物进口环境保护管理暂行规定, 国家环境保护局, 对外贸易经济合作部, 海关总署, 国家工商行政管理局和国家进出口商品检验局), *March 1, 1996; last amended on July 26, 1996*. These Provisions, issued by the National Environmental Protection Agency, Ministry of Foreign Trade and Economic Cooperation, General Administration of Customs, State Administration for Industry and Commerce, and China Commodity Inspection Bureau, specify requirements and prohibitions pertaining to the import of solid wastes.
- **Integrated Emission Standard for Air Pollutants - GB 16297-1996** (大气污染物综合排放标准, 国家环境保护局), *April 12, 1996*. This Standard, issued by the State Environmental Protection Administration, sets emissions limits for 33 air pollutants and further specifies requirements for the implementation of the Standard. This Standard applies to all emissions sources specifically with regard to waste gas emissions (replacing waste gas requirements found in GB 3548-83; GB 477-84; GB 4286-84; GB 4912-85; GB 4916-85; GB 4276-84; GB 4282-84; GB 4911-85; GB 4913-85; GB 4917-85; and GBJ 4-73); except for the following sources: boilers (GB 13271-1991); industrial furnace kilns (GB 9078-1996); thermal power plants (GB 13223-1996); coke ovens (GB 16171-1996); cement plants (GB 4915-1996); odors (GB 14554-93); automobiles (GB 14761.1 through GB 14761.7-93); and motorcycles (GB 14621-93).
- **Integrated Wastewater Discharge Standard – GB 8978-1996** (污水综合排放标准, 国家环境保护局), *October 4, 1996*. This wastewater discharge Standard, issued by the National Environmental Protection Agency, applies to industrial facilities that discharge to a municipal sanitary sewer system and to water bodies of the People's Republic of China. The discharge standards apply to all industries set up after October 4, 1996, with the exception of 13 specified industries with individual standards. It replaces the previous version - GB 8978-88, dated April 5, 1988.

- **National Catalogue of Hazardous Wastes**
(国家危险废物名录, 国家环保局, 国家经济贸易委员会, 对外贸易经济合作部, 公安部), *January 4, 1998, last amended on June 6, 2008*. This Catalogue, issued by the National Environmental Protection Agency, State Economic and Trade Commission, Ministry of Foreign Trade and Economic Cooperation and Ministry of Public Security, classifies hazardous wastes in accordance with their waste code, the category of waste, the source of the waste, and the common hazardous components or names of hazardous wastes.
- **Test Method Standard for Leaching Toxicity of Solid Waste - Roll Over Leaching Procedure - GB 5086.1-1997** (固体废物浸出毒性浸出方法— 翻转法, 国家环境保护局), *July 1, 1998*. This Standard, issued by the State Environmental Protection Administration, specifies the roll over leaching test method for identification of toxicity leaching of inorganic pollutants. This Standard replaces the former *GB 5086-85*.
- **Measures on the Management of Hazardous Waste Manifests** (危险废物转移联单管理办法, 国家环境保护局), *May 31, 1999*. These Measures, issued by the State Environmental Protection Administration, set forth the requirements for the transport of hazardous waste from manufacturing facilities to external locations.
- **Standard for Pollution Control on Hazardous Wastes Incineration – GB 18484-2001** (危险废物焚烧污染控制标准, 国家环境保护局, 国家质量监督检验检疫总局), *November 12, 2001*. This Standard, issued by the State Environmental Protection Administration and the State Administration of Quality Supervision, Inspection and Quarantine, replaces the standard with the same title and content issued by the State Environmental Protection Administration on December 3, 1999.
- **The Technological Policies for Prevention and Control of Hazardous Waste Pollution** (危险废物污染防治技术政策, 国家环境保护局), *December 17, 2001*. This document, issued by the State Environmental Protection Administration, provides information on the technological aspects of China's hazardous waste laws.
- **Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001** (危险废物填埋污染控制标准, 国家环境保护局, 国家质量监督检验检疫总局), *December 28, 2001*. This Standard, issued by the State Environmental Protection Administration and the State Administration of Quality Supervision, Inspection and Quarantine, sets forth requirements for operations management and pollution control at secure landfills.

Notes: This Standard is applicable to landfills that are located on facility grounds. Given the general lack of environmentally sound landfill locations in China, many manufacturing sites have their own (temporary) hazardous waste landfills and incineration facilities.

- **Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001**
(危险废物贮存污染控制标准, 国家环境保护总局, 国家质量监督检验检疫总局), *December 28, 2001*. This Standard, issued by the State Environmental Protection Administration and the State Administration of Quality Supervision, Inspection and Quarantine, sets forth requirements for segregation in hazardous waste design and location of storage areas and record keeping.
- **Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes – GB 18599-2001**
(一般工业固体废物贮存、处置场污染控制标准, 国家环境保护局, 国家质量监督检验检疫总局), *December 28, 2001*. This Standard, issued by the State Environmental Protection Administration and the State Administration of Quality Supervision, Inspection and Quarantine, sets forth requirements on site selection, design, operations management, inspection and maintenance, and closure and sealing of specific general industrial solid waste storage and disposal sites.
- **Law of the People's Republic of China on the Promotion of Cleaner Production**
(中华人民共和国清洁生产促进法, 全国人民代表大会常务委员会), *June 29, 2002*. This Law, issued by the Standing Committee of the National People's Congress, sets forth various voluntary and mandatory measures to promote clean production methods.
- **Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources – GB 18871-2002**
(电离辐射防护与辐射源安全基本标准, 国家质量监督检验检疫总局), *October 8, 2002*. These Standards, issued by the General Administration of Quality Supervision, Inspection and Quarantine of People's Republic of China, set forth various controls including occupational exposure limits, radioactive source shielding requirements, and radiation protection zones. They also repeal *Provisions for Radiation Prevention and Protection: GB 8703-88* (辐射防护规定) and *Basic Standards for Protection and Prevention of Radiation: GB 4792-84* (放射卫生防护基本标准). For the purposes of this protocol section, the relevant part of these provisions concerns the discharge of radioactive waste.
- **Regulations on the Management of Medical Waste**
(医疗废物管理条例, 国家环境保护局), *June 4, 2003*. These Regulations, issued by the State Environmental Protection Administration, specify the general management, storage, and transport requirements for medical waste.
- **Law of the People's Republic of China on the Prevention and Control of Radioactive Pollution** (中华人民共和国放射性污染防治法, 全国人民代表大会常务委员会), *June 28, 2003*. This Law, issued by the Standing Committee of the National People's Congress,

specifies management requirements relating to radioactive pollution and radioactive wastes. It also requires radioactive warning signs to be posted in areas where radioactive substances, waste, and equipment are used, stored or handled.

- **Catalogue on Medical Wastes Classification** (医疗废物分类目录, 卫生部, 国家环境保护总局), *October 10, 2003*. The Catalogue, issued by the Ministry of Health and State Environmental Protection Agency, classifies medical waste into five categories and provides information on characteristics and examples for each category.
- **Provisions on the Management of Medical Wastes from Medical Treatment Organizations** (医疗卫生机构医疗废物管理办法, 卫生部), *October 15, 2003*. These Provisions, issued by the Ministry of Health, specify the general management, storage requirements and transport issues relating to medical waste, with reference to the [Regulations on the Management of Medical Waste](#).
- **Measures on the Administration of Hazardous Wastes Operating License** (危险废物经营许可证管理办法, 国务院), *May 30, 2004*. These Measures, issued by the State Council, set forth requirements and procedures for hazardous waste operating licenses.
- **Notice on Application, Examination, and Approval of Hazardous Waste Operating License** (关于危险废物经营许可证申请和审批有关事项的通告, 国家环保总局), *January 18, 2005*. This Notice, issued by the State Environmental Protection Administration, requires separate licensing for each site operated by a facility.
- **Prevention and Control Measures on Environmental Pollution of Unwanted Dangerous Chemicals** (废弃危险化学品污染环境防治办法, 国家环保总局), *August 30, 2005*. This Measure, issued by the National Environmental Protection Agency, sets forth requirements for facilities that generate, manufacture, distribute, use, transfer, collect, or dispose of off-specification or unusable dangerous chemicals.
- **Guidelines for Solid Wastes Classification (Trial Implementation)** (固体废物鉴别导则(试行), 国家环境保护总局, 发展和改革委员会、商务部), *July 10, 2007*. These Guidelines, issued by the State Environmental Protection Administration, National Development and Reform Commission and Ministry of Commerce, establish provisions for the identification and classification of solid wastes.

- **Hazardous Waste Characteristic Classification for Corrosivity - GB 5085.1-2007** (危险废物鉴别标准 – 腐蚀性鉴别, 国家环境保护总局), *April 25, 2007*. This Standard, issued by the State Environmental Protection Administration, lists the characteristics of corrosivity in wastes. It replaces the former *GB 5085.1-1996*.
- **Hazardous Waste Characteristic Classification for Acute Toxicity - GB 5085.2-2007** (危险废物鉴别标准 – 急性毒性初筛, 国家环境保护总局), *April 25, 2007*. This Standard, issued by the State Environmental Protection Administration, lists the characteristics of acute toxicity in wastes. It replaces the former *GB 5085.2-1996*.
- **Hazardous Waste Characteristic Classification for Extraction Procedure Toxicity - GB 5085.3-2007** (危险废物鉴别标准 – 浸出毒性鉴别, 国家环境保护总局), *April 25, 2007*. This Standard, issued by the State Environmental Protection Administration, lists the characteristics of extraction procedure toxicity in wastes. It replaces the former *GB 5085.3-1996*.
- **Hazardous Waste Characteristic Classification for Ignitability - GB 5085.4-2007** (危险废物鉴别标准 – 易燃性鉴别 (GB 5085.4-2007), 国家环境保护总局), *April 25, 2007*. This Standard, issued by the State Environmental Protection Administration, lists the characteristics of ignitability in wastes.
- **Hazardous Waste Characteristic Classification for Reactivity - GB 5085.5-2007** (危险废物鉴别标准 – 反应性鉴别, 国家环境保护总局), *April 25, 2007*. This Standard, issued by the State Environmental Protection Administration, provides the characteristics of reactivity in wastes. It replaces the former *GB 5085.5-1996*.
- **Hazardous Waste Characteristic Classification for Toxic Substance Content - GB 5085.6-2007** (危险废物鉴别标准 – 毒性物质含量鉴别 (GB 5085.6-2007), 国家环境保护总局), *April 25, 2007*. This Standard, issued by the State Environmental Protection Administration, provides the method to identify hazardous wastes which contain substances that are toxic, carcinogenic, mutagenic, or toxic to reproduction.
- **Hazardous Waste Characteristic Classification - General Specifications - GB 5085.7-2007** (危险废物鉴别标准 – 通则 (GB 5085.7-2007), 国家环境保护总局), *April 25, 2007*. These Specifications were issued by the State Environmental Protection Administration.
- **Notice on Import of Solid Waste Used as Raw Materials** (关于进口可用作原料的固体废物申请事项的公告, 国家环境保护总局), *August 23, 2007*. This Notice, issued by the State Environmental Protection Administration, states a list of written documentation which should be submitted to SEPA in applying for import of solid wastes used for materials.

- **Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes** (电子废物污染环境防治管理办法, 国家环境保护总局), *September 27, 2007*. These Measures, issued by the State Environmental Protection Administration, are based on the *Law on the Prevention and Control of Pollution caused by Solid Wastes*, for the prevention and control of environmental pollution in activities of disassembling, utilizing and disposing of as well as generating and storing electronic wastes in China. The Measures came into force on February 1, 2008.
- **Administrative Measures for Examination and Approval of the Export of Hazardous Wastes** (危险废物出口核准管理办法, 国家环境保护总局), *December 25, 2007*. These Measures, which were issued by the State Environmental Protection Administration and which came into force as of March 1, 2008, implement the requirements of the *Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal* (herein cited as “*Basel Convention*”; requirements regarding prohibitions, notification and record keeping are covered.
- **Catalogue of Solid Wastes Prohibited from Import, State Environmental Protection Administration** (禁止进口固体废物目录, 国家环境保护总局、商务部、国家发展和改革委员会、海关总署和国家质量监督检验检疫总局), *January 29, 2008*. The Catalogue, which was issued by the Ministry of Commerce, National Development and Reform Commission, General Administration of Customs and General Administration of Quality Supervision, Inspection and Quarantine, contains 11 categories covering 69 types of wastes, including waste animal products, waste animal and vegetable oil, asphalt wastes, mine refuses, waste medicines, chemical wastes, waste rubber, scrap metal, special paper waste, waste textile materials, glass waste, scrap meta and others. This Catalogue replaces the *List of Goods Prohibited to Be Imported (Third Batch) - Hazardous Waste of December 23, 2001*.
- **Catalogue of Solid Wastes Restricted from Import for Raw Materials** (限制进口类可用作原料的固体废物目录, 国家环境保护总局、商务部、国家发展和改革委员会、海关总署和国家质量监督检验检疫总局), *January 29, 2008*. The Catalogue, which was issued by the State Environmental Protection Administration, Ministry of Commerce, National Development and Reform Commission, General Administration of Customs and General Administration of Quality Supervision, Inspection and Quarantine, contains seven categories covering 34 types of wastes, including sugar wastes, mine refuses, plastic scraps, rubber scraps, waste paper, waste textile materials, and scrap metal.

- **Catalogue of Solid Wastes that are Automatically Approved for Import for Use as Raw Materials**
(自动许可进口类可用作原料的固体废物目录, 国家环境保护总局、商务部、国家发展和改革委员会、海关总署和国家质量监督检验检疫总局), *January 29, 2008*. This Catalogue, which was issued by the State Environmental Protection Administration, Ministry of Commerce, National Development and Reform Commission, General Administration of Customs and General Administration of Quality Supervision, Inspection and Quarantine, contains three categories covering 20 types of wastes, including waste paper, scrap metal, and wood scrap.
- **Standard for Medical Waste Packages, Containers and Warning Labels - HJ 421-2008**
(医疗废物专用包装袋、容器和警示标志标准), *February 27, 2008*. These Provisions, issued by the State Environmental Protection Administration and Ministry of Health, establish packaging and labeling requirements for medical waste, including construction standards and specifications for containers and bags. These Standards replace the prior *Provisions of 2003 (No. 188)*.
- **Waste Electrical and Electronic Product Disposal and Recycling Management Regulations** (废弃电器电子产品回收处理管理条例), *February 25, 2009*. These Regulations primarily apply to disposal companies. They provide a definition of “disposal” for other legislation relating to disposal of electric and electronic wastes.
- **Environmental Protection Regulation on the Management of Imported Waste Iron and Steel (Trial Implementation)** (进口废钢铁环境保护管理规定 (试行)), *December 10, 2009*. These Regulations specify that only certain licensed metal smelters, scrap reprocessors, reclaiming centers and refurbishers of foreign equipment may import iron and steel scrap.
- **Test Method Standard for Leaching Toxicity of Solid Waste - Horizontal Vibration Method) – HJ 557-2010** (固体废物浸出毒性浸出方法 水平振荡法), *January 1, 2010*. This Standard, issued by the State Environmental Protection Administration, specifies the horizontal vibration test method for identification of toxicity leaching of inorganic pollutants. This Standard replaces the former *GB 5086.2-1997*.

This protocol section updates information contained in the prior version (2008). Specific additions, deletions and other changes made relative to the earlier version of the protocol are summarized in Appendix 4-A.

Topics and Questions

Notes: Technical standards for waste characterization and quality standards can be viewed in Chinese at the Ministry of Environmental Protection website at: <http://www.mep.gov.cn>, last accessed in June 2010. Certain standards can be viewed in English at the Ministry of Environmental Protection website at: <http://english.mep.gov.cn/> (last accessed in June 2010). Technical and method standards referenced in this protocol section are listed with full titles in Table 4-1. Standards can be purchased from the Standardization Administration, see: <http://www.sac.gov.cn>, last accessed in July 2010.

I. General Waste Requirements

Notes: The *Guidelines for Solid Wastes Classification (Trial Implementation)* (see Appendix 4-B) are used to distinguish solid wastes and non-solid wastes. The definition in the *Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes* (see the note after Question 4.2) is used for the initial waste classification, followed by a review of the wastes listed in the *Guidelines for Solid Wastes Classification (Trial Implementation)*. If the solid wastes are difficult to identify using these criteria, Part III of these Guidelines must be applied.

The *Guidelines for Solid Wastes Classification (Trial Implementation)* are not applicable for determination of the Harmonized System Code for purposes of export or import. [*Guidelines for Solid Wastes Classification (Trial Implementation)*]

- 4.1** Does the facility ensure that all waste residues and/or liquids from production equipment, facilities, and sewage are collected for treatment and that none are discharged into water bodies or disposed of at random? [*Provisions on Environmental Protection Design of Construction Projects, Article 48*]

Notes: The *Law of the People's Republic of China on Prevention and Control of Water Pollution*, as amended, prohibits the discharge of acidic liquids, alkaline liquids, industrial wastes, radioactive waste, municipal refuse, or toxic waste liquids into freshwater bodies.

- 4.2** If the facility generates, collects, stores, transports and/or disposes of solid wastes or industrial solid wastes, has it adopted measures to prevent pollution of the environment by those wastes? [*Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Articles 16, 17 and 30*]

Notes: For the purposes of this Law, the definition of "solid waste" means solid, semi-solid or gaseous (contained in container) discarded matter that pollutes the environment generated in production, construction, daily life or other activities. The definition of "industrial solid waste" is solid waste that is generated in industry, transportation, or other production activities. [[*Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 88*](#)]

- 4.3** Does the facility ensure that its product packaging is designed to reduce the use of packing materials and the production of packaging wastes? [[*Law of the People's Republic of China on the Promotion of Cleaner Production, Article 20*](#)]

Notes: The influence of the design of products and their packages on human health and the environment within the life cycle must be taken into consideration, and the usage of non-toxic, harmless, easily degradable, or recyclable design proposals must be prioritized. [[*Law of the People's Republic of China on the Promotion of Cleaner Production, Article 20*](#)]

II. Storage and Disposal of Industrial Solid Waste

Notes: The following terms apply to this subsection: [[*Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Sections 3.1 through 3.5 and Section 4*](#)]

- "Class I general industrial waste" means waste with leaching liquid concentration below the maximum permissible emission concentration of the [*Integrated Wastewater Discharge Standard - GB 8978-1996*](#) (see Appendix 5-C in Section 5.0 of this protocol), and a pH range of 6-9;

Notes: The methods used to determine the concentration of leaching liquid are the [*Test Method Standard for Leaching Toxicity of Solid Waste - Roll Over Leaching Procedure - GB 5086.1-1997*](#) and the *Test Method Standard for Leaching Toxicity of Solid Waste - Horizontal Vibration Method – HJ 557-2010*.

- "Class II general industrial waste" means waste with a leaching liquid concentration above the maximum permissible emission concentration of the [*Integrated Wastewater Discharge Standard - GB 8978-1996*](#) (see Appendix 5-C in Section 5.0 of this protocol), or a pH range above or below 6-9;
- "Class I or Class II general industrial solid waste storage and disposal site" refers to storage and disposal sites for Class I or Class II wastes respectively;

- "Disposal site" refers to a permanent centralized holding area that complies with the [Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001](#);
- "General industrial waste" refers to a waste that is not listed in the *National Catalogue of Hazardous Waste* (available at the Ministry of Environmental Protection website indicated in the introductory notes to this section), in [Test Method Standard for Leaching Toxicity of Solid Waste - Horizontal Vibration Method](#) - HJ 557-2010, or in the standards listed in Table [4-1](#); and
- "Storage area" means a temporary centralized storage area that complies with the [Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001](#).

- 4.4** If the facility generates industrial solid waste, did it provide information on the quantity, flow path, storage, and disposal of the waste, to the environmental protection department at or above the county level? [[Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 32](#)]

Notes: This is a "one-time" submission unless there is a change in the type, quantity, or flow path of industrial waste being generated. Depending on the type and amount of wastes generated, facilities may also be required to register with the local environmental protection department. [[Circular on Reporting and Registering of Solid Wastes throughout China](#)]

- 4.5** If the facility has closed, suspended use of, or dismantled equipment involved in the prevention and control of pollution by industrial solid waste, did it first receive approval from the environmental protection department at or above the county level prior to doing so? [[Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 34](#)]

- 4.6** If the facility generates industrial solid waste that cannot be temporarily or completely utilized, does it comply with the following requirements: [[Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 33](#)]

- Sets up storage and disposal facilities or sites;
- Stores wastes separately by categories; or
- Disposes of wastes in a harmless manner?

4.7 If the facility transfers solid waste out of a province, autonomous region, or municipality that is directly under the control of the central government, was a report for the storage or disposal of the waste filed with the environmental protection department at the provincial level from which the solid waste was transferred, and was a permit obtained for the transfer of the waste from the environmental protection department of the province that is receiving the waste? [[*Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 23*](#)]

4.8 Does the facility ensure that it does not receive (import) any solid waste originating outside of China unless it is capable of reusing the waste as a raw material and the facility has received a permit to do so from the State Council? [[*Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Articles 24 and 25*](#)]

Notes: A list of solid wastes that may be imported for use as raw material is provided in Table [4-2](#).

4.9 If the facility is located along the coastline (i.e., adjacent to the ocean or a tidal waterway), and the industrial waste disposal area used by the facility is located on the coast, have the following environmental protection facilities and features have been installed: [[*Regulation on the Management Concerning the Prevention and Control of Marine Environmental Damage Caused by Pollution from Coastal Construction Projects, Article 20*](#)]

- Protective embankments and a sealing layer/ impermeable layer at the base of the disposal area;
- A system to channel, collect and dispose of leachate; and
- A device or system to vent flammable gases to prevent an explosion?

4.10 If the facility has a Class I or Class II general industrial solid waste storage and disposal site, does it ensure that the site complies with the following requirements: [[*Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 5*](#)]

- Site selection was conducted in accordance with the local urban and rural development collective planning requirements;
- The site is located downwind of industrial or residential centers;
- The site is located at least 500 meters away from residential areas;

- The foundation load capacity is not exceeded;
- The site is not located at/on a fault zone, fault crush zone, limestone cave, natural landslide or mud-rock flow zone;
- The site is not located on beaches and floodplains below the highest water level of a river, lake or reservoir;
- Site is not located in natural protection zones, scenic spots and other zones that are under protection;
- For Class I sites, site selection priority is given to abandoned mining pits or sunken areas; and
- For Class II sites, site location is not in a groundwater supply area and the distance between the ground surface level and the groundwater level is more than 1.5 meters?

4.11 If the facility has a Class I or Class II general industrial solid waste storage and disposal site, does it ensure that the design of the storage and disposal site complies with the following requirements: [\[Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB18599-2001, Section 6\]](#)

- The type of construction is appropriate for the type of general industrial wastes;
- The storage and disposal site evaluation is included in the Environmental Impact Assessment of the construction project;
- Another Environmental Impact Assessment is performed in the case of expansion, re-construction and/or the extension of active duty of the storage and disposal site;
- Prevention measures for dust pollution are in place;
- Diversion ditches are installed at the periphery of the storage and disposal site to prevent rainwater runoff from entering the storage and disposal site, to avoid an increased volume from leachate, and to prevent landslides;
- Leachate collection and drainage systems are installed;

- Dikes, dams or retaining walls are constructed to prevent the release of the general industrial solid wastes and leachate runoff;
- Mitigation measures are undertaken to prevent the foundation from sinking, becoming unbalanced or partially sinking;
- Mitigation measures are undertaken to prevent self-combustion if the gangue content of sulfur is more than 1.5 percent; and

Notes: Gangue is a valueless rock or aggregate of minerals in an ore.

- Signs are posted in accordance with Graphical Signs for Environmental Protection - Solid Waste Storage (Disposal) Site - GB 15562.2-1995, as specified in Appendix 4-C?

4.12 If the facility has a Class II general industrial solid waste storage and disposal site, in addition to the requirements mentioned in the Question [4.11](#), does it comply with the following measures: [Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 6.2]

- If the permeability coefficient of the ground surface level is more than 1.0×10^{-7} centimeter per second, the impermeable layer is made of natural or artificial materials with a thickness that provides a permeability coefficient of 1.0×10^{-7} centimeter per second, equivalent to the thickness of 1.5 meters of clay; and
- At least three groundwater monitoring wells are installed at the periphery of the storage and disposal site, as follows:
 - One baseline/background monitoring well is located along the flow direction of the groundwater and upgradient of the storage and disposal site;
 - One contamination monitoring well is located along the flow direction of the groundwater and downgradient of the storage and disposal site; and
 - One contamination dispersion well is located at the periphery of the storage and disposal site where dispersion may occur?

Notes: If the geology and hydrogeology information shows that the water level is too deep, and proves that groundwater will not be contaminated, groundwater monitoring wells need not be installed. [[*Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 6.2*](#)]

4.13 If the facility has a Class I or Class II general industrial solid waste storage and disposal site, does it ensure that management of operations complies with the following requirements: [[*Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 7*](#)]

- Approval has been obtained from the competent administrative department of environmental protection that approved the Environmental Impact Assessment report prior to operations;
- Storage and disposal sites for general industrial solid wastes are not used for hazardous wastes and domestic wastes;
- The discharge of leachate from the storage and disposal site meets the requirements of the [*Integrated Wastewater Discharge Standard - GB 8978-1996*](#), see Appendix 5-C in Section 5.0 of this protocol;
- The emission of air pollutants meets the requirements for fugitive emissions as specified in Table 2 of the [*Integrated Emission Standard for Air Pollutants - GB 16297-1996*](#), see Appendix 3-D in Section 3.0 of this protocol;
- An inspection and maintenance system is established;
- Periodic inspections and maintenance of dikes, dams, retaining walls and diversion ditches are conducted;
- A manifest filing system is established on site;
- The type and quantity of the general industrial solid wastes sent to the site are recorded, together with the information listed below: **<RECORD KEEPING>**
 - Inspection and maintenance information for all installations and equipment;

- Observation and disposal information of foundation sinking, collapse or landslide; and
- Monitoring data for leachate and other discharges of treated wastewater and emission of air pollutants;

Notes: No specific retention period is mentioned in the Standard beyond the statement that records must be available for long-term access. [[*Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 7.1.5*](#)]

- Graphical signs for environmental protection are inspected annually and maintained according to [*Graphical Signs for Environmental Protection - Solid Waste Storage \(Disposal\) Site - GB 15562.2-1995*](#) (see Appendix 4-B); and
- Class II waste is prohibited from being disposed of at a Class I site?

4.14 If the facility has a Class II general industrial solid waste storage and disposal site, in addition to the requirements mentioned in Question [4.13](#), does it meet the following requirements: [[*Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 7.3*](#)]

- Conducts periodic inspections and maintenance of seepage-proof/impermeable constructions;
- Conducts groundwater monitoring (groundwater quality must be determined in accordance with [*Quality Standard for Groundwater - GB/T 14848-93*](#), see Table [4-3](#) for parameters);
- Conducts periodic inspections and maintenance of leachate collection drainage systems and leachate handling installations; and
- Conducts monitoring of leachate and other treated wastewater?

4.15 Does the facility comply with the following requirements when implementing the closure and capping of a Class I or Class II general industrial solid waste storage and disposal site: [[*Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 8*](#)]

- The site is closed or capped when the allowable operation period for the site expires, or if the site is unable to accommodate any more incoming waste;

- A closure or capping plan is submitted for approval to the competent administrative department for environmental protection above the county level;
- A terrace/step is built for every elevation of 3 meters to 5 meters;

Notes: The terrace/step width must be more than 1 meter, with a slope of 2-3 percent and must be able to withstand rainstorm erosion.

- After the closure or sealing of the site, the facility inspects and maintains the site regularly until it is stabilized; and
- Signs are posted that indicate the date of closure?

4.16 Are industrial solid waste storage and disposal sites filled and/or capped and monitored as follows: [[*Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 8*](#)]

- Class I general industrial solid waste storage and disposal sites are filled with a layer of natural soil, the thickness of which is determined by the grain size of the solid wastes and the type of vegetation planted on it; and
- The ground surface of Class II sites has two layers, as follows:
 - The first layer is a separation layer, with a thickness of 20 to 45 centimeters of compacted clay; and
 - The second layer is the covering layer, which uses natural soil and growth of vegetation, whose thickness is determined by the type of vegetation;
- Class II sites have leachate monitoring and the discharge of treated water is continued until the water quality is stabilized; and
- The groundwater monitoring program at a Class II site is continued after closure?

III. General Hazardous Waste Management

Notes: Listed hazardous wastes are classified in accordance with the [*National Catalogue of Hazardous Wastes*](#) classification scheme (code; category of waste; source of waste; and common hazardous components or name of hazardous wastes). An English version of the [*National Catalogue of Hazardous Wastes*](#) is published by the Ministry of Environmental Protection and can be viewed at the Ministry website indicated in the introductory notes to this protocol section.

Characteristic hazardous wastes are those classified as having one or more of the following hazardous properties: corrosivity, acute toxicity, toxicity, ignitability, reactivity or toxic substance content, according to the *Identification Standards for Hazardous Wastes - GB 5085.1 through .7*), see Table [4-1](#).

- 4.17** If a facility collects, stores or disposes of hazardous wastes, has it received an operating license for the activity? [[*Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 57*](#)]; [[*The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 6.1*](#)] and [[*Measures on the Administration of Hazardous Wastes Operating License, Article 2*](#)]

Notes: This requirement is only applicable to facilities engaged in the collection, storage or disposal of hazardous waste. The Law does not specify a threshold limit that triggers the licensing requirement. Therefore, a facility that collects, stores or disposes of any quantity of hazardous waste for any length of time must obtain a license.

- 4.18** Does the facility ensure that any firm contracted by the facility for services relating to the collection, storage, or disposal of hazardous waste possesses the appropriate business license issued by the environmental protection administration? [[*Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 57*](#)]

Notes: Any enterprise that disposes of hazardous wastes in landfills that does not conform to the applicable State regulations will be subject to a pollution charge. [[*Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 56*](#)]

A facility with a Hazardous Waste Integrated Operating License may conduct collection, storage and disposal activities involving various types hazardous waste. A facility with a Hazardous Waste Collection Operating License may only collect waste mineral oil generated from powered truck maintenance activities and waste nickel-cadmium batteries from the public, but is not licensed to store or dispose of these materials. [[*Measures on the Administration of Hazardous Wastes Operating License, Article 3*](#)]

A separate operating license is required for each establishment at a separate location. [*Notice on Application, Examination, and Approval of Hazardous Waste Operating License, Sections 1.1 & 1.3*]

- 4.19** If the facility generates hazardous wastes, does it ensure it does not use the technologies and installations that are listed in the phase-out category in the *Guidance Catalogue for the Adjustment of Industrial Structure (2005)* in Section 2.0 of this protocol, Appendix 2-B? [*The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 2.1*]

Notes: The facility must use low-waste, reduced-waste and/or non-waste technologies. [*The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 2.1*]

The full text of the *Guidance Catalogue for the Adjustment of Industrial Structure (2005)* is available for download at:

http://www.ndrc.gov.cn/zcfb/zcfbl/zcfbl2005/t20051222_54304.htm, last accessed in June 2010.

- 4.20** If the facility generates hazardous wastes, does it post signs to indicate the presence of hazardous wastes? [*The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 2.2*]
- 4.21** Does the facility ensure that hazardous wastes generated by service industries and/or offices (such as discarded batteries or fluorescent light bulbs) are segregated from domestic wastes during waste collection? [*The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 3.3*]
- 4.22** If the facility is temporarily unable to recycle or handle the hazardous wastes that it generates, does it implement the following measures: [*The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 6.1*]
- Sets up special storage facilities for the hazardous waste and posts hazardous wastes signs; or
 - Contracts a permitted hazardous waste company to store the wastes?

Notes: The storage period must not exceed one year unless approved by the original environmental protection bureau where the operating license was issued if extending the storage period is necessary or permitted under other laws and regulations. [*Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 58*]

4.23 Does the facility ensure that it does not discharge or bury extremely toxic, soluble waste residues (e.g., mercury, cadmium, arsenic, chromium, lead, cyanide, and yellow phosphorus), and that such waste residues are disposed of properly? [[*Provisions on Environmental Protection Design of Construction Projects, Article 50*](#)]

4.24 Do sites for depositing extremely toxic residues meet the following criteria: [[*Provisions on Environmental Protection Design of Construction Projects, Article 50*](#)]

- Are waterproof and protected against seepage and leachate loss; and
- Include facilities for collecting and monitoring rainwater or leachate from deposit sites?

4.25 If the facility possesses lead batteries, are they recycled? [[*The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 9.4.4*](#)]

Notes: Lead batteries must be recycled and may not be disposed of by other means.

4.26 Does the facility ensure that hazardous and toxic waste storage areas meet the following criteria: [[*Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 58*](#)] and [[*Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Sections 4.5, 6.2.6 and 7.6*](#)]

- Incompatible hazardous wastes are stored separately; and
- Hazardous wastes are stored separately from non-hazardous wastes?

4.27 If the facility generates flammable or explosive hazardous waste that can emit toxic gas under normal atmospheric temperature and pressure, does it ensure that the following conditions are met: [[*Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 4.2*](#)]

- Wastes are treated and stabilized prior to storage; or
- The wastes are stored using means appropriate for flammable or explosive hazardous waste?

- 4.28** If the facility generates hazardous wastes, does it ensure that the hazardous wastes are segregated and collected in approved containers according to their classification? [[*The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 3.1*](#)] and [[*Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 4.4*](#)]

Notes: This requirement is not applicable to non-hydrolyzed or non-volatilized solid hazardous wastes under normal atmospheric temperature and pressure. The non-hydrolyzed or non-volatilized solid hazardous wastes may be collected separately in the storage facilities. [[*Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 4.3*](#)]

Leak-proof plastic bags may be used as an alternative if the hazardous waste does not fit into the containers that are normally used by the facility. [[*Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 4.6*](#)]

- 4.29** Does the facility ensure that containers used for hazardous waste storage comply with the following: [[*Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 5*](#)]

- Only approved containers are used;
- Materials used to construct the containers are sufficiently durable and strong;
- Materials used to construct the containers and their linings are compatible with the hazardous waste to be stored;
- Containers are resistant to corrosion and pressure and are sealed;
- Containers are affixed with a distinct label; and
- Containers are in a good condition?

Notes: The requirements for durability and strength of materials are not specified.

Liquid hazardous waste may be contained in a drum if the drum has a pressure release opening with a diameter of less than 70 millimeters. [[*Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 5.5*](#)]

- 4.30** Does the facility ensure that labels on hazardous waste containers include the following information: [*The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 3.2*]
- Name of the hazardous waste;
 - Weight of the hazardous waste;
 - Composition of the hazardous waste;
 - Characteristics of the hazardous waste; and
 - The emergency and rescue measures to be implemented in the event of a pollution incident (e.g., leaks or spills)?
- 4.31** If the facility stores liquid or semi-solid hazardous waste in a container, does it ensure that the following conditions are met: [*Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 4.7*]
- There is sufficient space in the container; and
 - A head space of at least 100 millimeters and above is retained between the top of container and the liquid surface (ullage)?

IV. Unwanted Dangerous Chemicals

Notes: “Unwanted dangerous chemicals” refers to dangerous chemicals that are discarded, expired, contaminated, or otherwise unfit for use and intended to be discarded. This includes out-dated, off-specification and expired chemicals. See the Subsection entitled, “Dangerous Chemicals” in Section 16.0 of this protocol for a list of dangerous chemicals. [*Prevention and Control Measures on Environmental Pollution of Unwanted Dangerous Chemicals, Article 2*]

- 4.32** If the facility generates unwanted dangerous chemicals, has it established the following: [*Prevention and Control Measures on Environmental Pollution of Unwanted Dangerous Chemicals, Article 9*]
- A management system for disposing of unwanted dangerous chemicals;
 - A plan for management of unwanted dangerous chemicals and for reporting to the environmental department; and
 - An information file on unwanted chemicals?

4.33 If the facility generates unwanted dangerous chemicals, has it furnished the following information to the local environmental department above the county level pertaining to the chemicals generated: [\[Prevention and Control Measures on Environmental Pollution of Unwanted Dangerous Chemicals, Article 9\]](#)

- Chemical types, trade/common name;
- Composition;
- Characteristics;
- Amount of production;
- Flow of chemical transfer;
- Storage information;
- Usage;
- Disposal method; and
- Material Safety Data Sheet (MSDS)?

4.34 If the facility manufactures, stores or uses dangerous chemicals and undergoes a change of production or ceases production or operations, does it comply with the following requirements: [\[Prevention and Control Measures on Environmental Pollution of Unwanted Dangerous Chemicals, Article 14\]](#)

- Ensures that production facilities/equipment, storage facilities/equipment, stored product, and raw materials are properly disposed of;
- Conducts soil and groundwater investigations at the facility area; and
- Submits an environmental risk assessment report to the environmental protection bureau?

Notes: If the facility has caused pollution to the site, it must submit an environmental remediation/recovery plan to the environmental protection department above county level. Upon receipt of the plan approval, environmental remediation/recovery of the polluted site must be conducted within the specified timeline. An environmental inspection is required upon the completion of remediation/recovery and the inspection results must be submitted to the environmental protection department. [\[Prevention and Control Measures on Environmental Pollution of Unwanted Dangerous Chemicals, Article 14\]](#)

V. Hazardous Waste Storage Areas

- 4.35** If the facility generates hazardous waste, does it construct a designated hazardous waste storage area and installation? [[*Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 4.1*](#)]

Notes: The facility may convert an existing building into hazardous waste storage area.

- 4.36** Does the facility ensure that the boundaries of the hazardous waste storage areas are built with retaining walls or other means of protection, such as railings? [[*Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 8.1.2*](#)]

- 4.37** Does the facility ensure that sites selected for hazardous waste storage areas comply with the following requirements: [[*Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 6.1*](#)]

- Have a stable geological structure, with earthquake intensity of less than 7 degrees;
- Are located where the lowest point of the area is higher than the maximum groundwater level;
- Are located 800 meters away from residential areas, and 150 meters away from surface water areas;
- Avoid limestone cave areas or areas that potentially suffer from serious natural disasters (e.g., flood, landslide, mud-rock flow and tide);
- Are located beyond the protection areas for flammable and explosive dangerous goods warehouses and high-voltage electric current lines; and
- Are located downwind of residential areas?

- 4.38** Does the facility ensure that hazardous waste storage areas comply with the following additional requirements for each area: [[*Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 6.1 and 6.3*](#)] and [[*The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 6.2*](#)]

- The foundation is made up of an impermeable/seepage-proof layer with a thickness as follows:
- If made of clay, at least 1 meter;
- If made of HDPE, at least 2 millimeters (2mm);

- Has leak and spill collection, venting pipes and exhaust emissions control devices in place;
- Floor areas that are used to store liquid and semi-solid hazardous wastes are corrosive-resistant and do not have cracks;
- Storage areas for incompatible hazardous wastes have partitions to keep the wastes apart;
- Fire prevention installations are in place and personnel are on duty 24 hours a day at toxic, flammable and explosive hazardous wastes storage areas;
- Have safety lighting facilities and an observation window; and
- Back-up ventilation system and closed-circuit monitoring devices are in place?

4.39 Does the facility ensure that warehouse-type hazardous waste storage areas comply with the following requirements: [[Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 6.2](#)]

- Have a durable floor and skirting, are seepage-proof and the materials are compatible with the hazardous wastes;
- Have leachate collection, vent pipes and exhaust emissions control devices;
- Have safety lighting facilities and an observation window;
- Have corrosive resistant and crack-free floor areas for liquid, semi-solid hazardous wastes storage; and
- Have secondary containment equal to the capacity of at least one fifth of the aggregate volume, or the volume of the largest container?

4.40 Does the facility ensure that management for hazardous waste storage operations complies with the following requirements: [[Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 7](#)]

- Storage of wastes is appropriate to the physical and chemical property analysis report;

- Hazardous wastes that are received are verified and recorded; and **<RECORD KEEPING>**
- A passageway is provided in between every waste pile?

Notes: See Question [4.52](#) though Question [4.54](#) for additional details on hazardous waste record keeping requirements.

- 4.41** Are all hazardous waste containers and all facilities/sites for the collection, storage, transport, and disposal of hazardous wastes appropriately labeled according to the [Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Appendix A and B](#)? [[Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Articles 52](#)] and [[Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 4.9](#)]

Notes: The label format and hazard symbols are shown in Appendix 4-D. The [Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001](#), including the attachments detailing special codes, compatibility and other information, is available in Chinese at the Ministry of Environmental Protection website indicated in the introductory notes to this protocol section.

- 4.42** Does the facility ensure that emissions from vent pipes in hazardous waste storage areas comply with the standards of [Integrated Emission Standard for Air Pollutants - GB 16297-1996](#) and [GB 14554](#) (see Appendix 3-D and Section 3.0 of this protocol)? [[Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 7.9](#)]

- 4.43** Does the facility ensure that hazardous waste storage areas are equipped with the following items: [[Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 8.1.3](#)]

- Communication facilities;
- Lighting facilities;
- Safety protective clothing and equipment; and
- Emergency response equipment?

- 4.44** Does the facility ensure that warning signs have been put up at hazardous waste storage facilities? [[*Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 8.1.1*](#)]

Notes: Installation of warning signs must comply with the standard of [*Graphical Signs for Environmental Protection - Solid Waste Storage \(Disposal\) Site - GB 15562.2-1995*](#) (Appendix 4-C).

- 4.45** If the facility stores industrial waste in piles outside the plant, in addition to the storage area requirements mentioned in the Question [4.43](#), have measures been implemented to prevent the following: [[*Provisions on Environmental Protection Design of Construction Projects, Articles 41 and 51*](#)]

- Rainfall from leaching pollutants out of the piles;
- Generation of dust; and
- Self-combustion?

- 4.46** If the facility plans to close down a hazardous waste storage area, does it comply with the following: [[*Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 9*](#)]

- Submits a closure proposal to the relevant authority for approval; and
- Sends any contaminated installation, soil or wall materials that could not be cleaned/ decontaminated to a landfill for disposal?

- 4.47** Does the facility ensure that the following requirements pertaining to hazardous waste containers and storage facilities are met: [[*Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 7.8 & 7.9*](#)]

- All hazardous waste containers and storage facilities are examined periodically to ensure their functionality; and

Notes: No frequency is specified for the examination.

- The discharge from spills, washing, or leaking liquids in the hazardous waste storage area complies with the [*Integrated Wastewater Discharge Standard - GB 8978-1996*](#), found in Appendix 5-C in Section 5.0 of this protocol?

4.48 Does the facility ensure that its hazardous waste records contain the following information:
[Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 7.7]

<RECORD KEEPING>

- Name of the hazardous waste;
- Source of the hazardous waste;
- Quantity of the hazardous waste;
- Special characteristics of the hazardous waste;
- Type of container packaging;
- Date the waste is received for storage;
- Storage location;
- Date the waste is taken out of storage; and
- Name of the party receiving the waste?

4.49 Are copies of hazardous waste records and storage manifest kept for at least 3 years?
[Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 7.7]

<RECORD KEEPING>

VI. Hazardous Waste Manifests

Notes: In this subsection, “competent department of environmental protection administration” is the competent department of the environmental protection administration of the people’s government in cities directly under the province, in municipalities directly under the Central Government, and in the regional administrative office.

The competent department of environmental protection administration of the people’s government at the municipal level under the jurisdiction of provinces oversees manifesting of hazardous waste in their administrative zones; in the administrative zones where a district administration has been established, the competent department of environmental protection administration of the people’s government of the municipality and the district administration oversees hazardous waste manifesting.

4.50 If the facility produces hazardous waste, does it conduct the following activities: [*Measures on the Management of Hazardous Waste Manifests, Article 4*]

- Submits a transfer proposal to the local environmental protection administration;
- Obtains approval from the local environmental protection administration prior to transferring hazardous waste;
- When approval has been obtained, applies for hazardous waste manifest forms from the competent department of environmental protection administration at the locality from which the hazardous wastes are to be transferred; and
- Within three days prior to the transfer of hazardous waste, conducts the following activities:
 - Reports to the competent department of environmental protection administration in charge of the locality from which the hazardous waste is to be transferred; and
 - Reports the expected date and time of arrival of the hazardous waste to the competent department of environmental protection administration in charge of the locality where the hazardous waste will be received?

4.51 If the facility transfers hazardous waste, does it ensure that copies of the manifest forms mentioned in Question 4.50 are completed each time as follows: [*Measures on the Management of Hazardous Waste Manifests, Article 5*]

- If the same kind of hazardous waste is transferred in vehicles or vessels, forms are completed for each vehicle or each vessel; and
- If different kinds of hazardous waste are transferred in each vehicle or vessel, forms are completed for each kind of waste?

4.52 Does the facility handle the manifest forms as follows: [*Measures on the Management of Hazardous Waste Manifests, Article 6*]

- Accurately completes all columns in the forms and stamps its official seal on the form;
- Keeps a record of the duplicate of the first page of the forms after verification, acceptance and signature by the transporter; **<RECORD KEEPING>**

- Submits the second page of the forms to the competent department of environmental protection administration at the locality from where the hazardous waste is transferred; and
- Submits the first page of the forms, together with the rest of the pages, to the transporter?

4.53 When the facility receives the manifest forms from the hazardous waste recipient, does it do the following: [*Measures on the Management of Hazardous Waste Manifests, Article 8*]

- Keeps a record of the first page of the manifest form; and **<RECORD KEEPING>**
- Submits the second page of the manifest forms to the competent department of environmental protection administration at the locality from where the hazardous waste is transferred, within two days?

Notes: The waste recipient will complete the manifest forms upon receipt, and will submit the first page and a duplicate of the second page of the forms to the facility within 10 days of the date of receipt of the wastes.

4.54 Does the facility keep manifest forms for transportation of hazardous waste for five years? [*Measures on the Management of Hazardous Waste Manifests, Article 10*] **<RECORD KEEPING>**

Notes: If the competent department of environmental protection administration deems it necessary to extend the period for keeping the forms, the facility must comply.

The requirements for retention of manifests under the *Measures on Management of Hazardous Waste Manifests and the Standards for Pollution Control on Hazardous Waste Storage* conflict. The requirements of the *Measures on Management of Hazardous Waste Manifests* have been used in this protocol section as they more narrowly focus on hazardous waste manifesting.

VII. Hazardous Waste Incineration

Notes: See the Subsection entitled, “Hazardous Waste Incinerators” in Section 3.0 of this protocol for additional air-related waste incineration requirements.

4.55 If the facility has an incinerator, does it ensure that the incinerator is not constructed at the following locations: [[*Standard for Pollution Control on Hazardous Wastes Incineration – GB 18484-2001, Section 4.1*](#)]

- Areas stipulated under the *GB 3838-2002 (Environmental Quality Standard for Surface Water)* as Category I or Category II functional zones;

Notes: A Category I functional zone mainly applies to sources of water bodies and national nature preserves, while a Category II functional zone mainly applies to class A water source protection areas for centralized drinking water supply, sanctuaries for rare species of fish, and spawning grounds for fish and shrimp, etc. (see Appendix 5-B in Section 5.0 of this protocol).

- Areas stipulated under [*Ambient Air Quality Standards - GB 3095-1996*](#) as a Level I region;

Notes: Three regions have been classified under [*Ambient Air Quality Standards - GB 3095-1996*](#), as follows: [[*Ambient Air Quality Standards - GB 3095-1996, Article 4.1*](#)]

- “Level I region” is a natural conservation area, scenic spot and historical site, and/or a region under a special protective regime;
 - “Level II region” is a residential area, a mixed commercial, traffic and residential area, cultural area, industrial area and rural area; and
 - “Level III region” is a special industrial area.
- Densely populated residential areas, commercial areas, or cultural areas;
 - Upwind of residential areas; or
 - Areas that are affected by floods, tides, or are prone to saturation?

4.56 Does the facility ensure that explosive and radioactive hazardous wastes are not incinerated? [[*Standard for Pollution Control on Hazardous Wastes Incineration – GB 18484-2001, Section 4.2*](#)]

4.57 If the facility has constructed a new centralized hazardous waste incinerator and there are buildings within a radius of 200 meters, does the facility ensure that the chimney height is at least 5 meters above the highest building? [[*Standard for Pollution Control on Hazardous Wastes Incineration – GB 18484-2001, Section 4.3.2*](#)]

Notes: No definition of a “new” facility or applicability date is specified.

4.58 Does the facility ensure that a hazardous waste incinerator is installed with the following equipment: [[*Standard for Pollution Control on Hazardous Wastes Incineration – GB 18484-2001, Section 4.4.4*](#)] and [[*The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 7.2.3*](#)]

- Tail gas purification system;
- Alarm system; and
- Emergency handling devices?

Notes: The terms “alarm system” and “emergency handling devices” are not further defined in the legislation.

4.59 Does the facility ensure that hazardous waste storage areas at incineration facilities meet the following requirements: [[*Standard for Pollution Control on Hazardous Wastes Incineration – GB 18484-2001, Section 4.5*](#)]

- Signs at the hazardous waste storage areas comply with [*Graphical Signs for Environmental Protection - Solid Waste Storage \(Disposal\) Site - GB 15562.2-1995*](#), see Appendix 4-C;
- Storage containers are labeled, and are corrosive-resistant, pressure-resistant, sealed, and non-reactive with the waste;
- Incompatible hazardous wastes are stored separately;
- Storage areas are equipped with water collection and discharge facilities, and seepage-proof facilities; and
- The distance between the storage area and the incinerator complies with the fire prevention requirements?

Notes: The required distance between a storage area and an incinerator is not provided. Fire safety requirements presented in the Subsection entitled, “Fire Requirements for Warehouses” in Section 13.0 of this protocol for warehouse safety state that that there must be sufficient distance between containers to ensure fire safety. However, the term “sufficient” is not defined. [[*Rules Concerning Warehouse Safety and Fire Control, Article 16*](#)]

See Section 13.0 of this protocol for general fire protection distance requirements and Section 6.0 of this protocol for protection distances relating to tanks.

4.60 If the facility has an incinerator, does it ensure that the incineration of hazardous waste complies with the following requirements: [*The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 7.2*]

- Temperature of the incinerator reaches 1,100 degrees Celsius and above; and
- Residues or ashes generated during the incineration process are disposed of at a secure hazardous waste landfill?

VIII. Hazardous Waste Landfills

Notes: In this subsection, the following terms are used: [*Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB18598-2001, Section 3*]

- "Composite liner" is a liner that has one layer of artificial impermeable/ seep-proof liner material;
- "Double artificial liner" is a liner that has two layers of artificial impermeable/ seep-proof liner;
- "Natural foundation layer" is a liner that has an impermeable/ seep-proof natural soil layer; and
- "Impermeable/ Seep-proof layer" is a man-made separation layer to prevent leachate from seeping to the groundwater.

4.61 If the facility has plans to establish a landfill, does it meet the following requirements: [*Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001, Section 4*]

- The selection complies with national and local urban and rural construction overall planning requirements;
- The landfill is located in an area that is stabilized and free from damage by natural or man-made factors;
- An Environmental Impact Assessment is conducted and approved by the competent administration department of Environmental Protection prior to construction;

- The location is not in an urban development planning zone for industries and agriculture, agricultural protection area, natural conservation area, scenic area, relic protection area, drinking water resource protection area, water supply reserve area, minerals resources reserve area, etc.;
- The landfill site meets the following criteria:
 - Located more than 3000 meters away from an airport or military base;
 - Located more than 800 meters away from residential areas;
 - Site above the water level of a 100-year flood event; and
 - Site at least 150 meters away from a surface water body;
- The geology of the landfill site fulfills the following criteria:
 - Foundation layer requirements (see Question [4.64](#));
 - Has sufficient clay sources on site or in nearby locations for the construction of the impermeable/ seepage-proof layer;
 - Does not coincide with areas of groundwater sources for drinking purpose;
 - Water supply wells are not located down gradient;
 - The groundwater level is 3 meters below the impermeable layer;
 - The natural rock stratum is relatively even, with low permeability; and
 - Geological structures are relatively simple and stable, without the presence of geological faults; and
- The site has sufficient acreage to accommodate expansion over a 10-year lifespan?

4.62 Does the facility ensure that wastes that are sent to the landfill site meet the following entry/ acceptance requirements: [[Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001, Section 5](#)]

- Wastes to be landfilled directly comply with the following:

- The harmful substances in the waste's free liquids have exceeded the limits in Standard Hazardous Waste Characteristic Classification for Extraction Procedure Toxicity - GB 5085.3-2007; and
- The pH of the waste's free liquids is within the range of 7.0 -12.0; and
- The following wastes are pretreated prior to landfilling:
 - Wastes with concentrations of harmful substances in the free liquids that exceed the limits in Table 4-4;
 - Wastes whose free liquids have a pH of less than 7.0 or more than 12.0;
 - Reactive and flammable waste;
 - Waste with a moisture content more than 85%; and
 - Waste in liquid form?

Notes: To monitor compliance with the requirements in this question, the following standards for test methods are used (see Table 4-1 for full standard names):

- Standards *Test Method Standard for Leaching Toxicity of Solid Waste - Roll Over Leaching Procedure - GB 5086.1, HJ 557-2010, and GB/T 15555.1-11* for the harmful substances limits with concentrations specified in Standard Hazardous Waste Characteristic Classification for Extraction Procedure Toxicity - GB 5085.3-2007, and those presented in Table 4-4 (GB 18598); and
- Standard *Test Method Standard for Leaching Toxicity of Solid Waste - Roll Over Leaching Procedure - GB 5086.1, HJ 557-2010, and GB/T 15555.12* for pH.

4.63 Does the facility ensure that the wastes listed below are not landfilled: [Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB18598-2001, Section 5.3]

- Medical wastes; and
- Waste that is incompatible with the landfill liner?

4.64 Does the facility ensure that the design of a hazardous waste landfill site fulfills the following requirements: [Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001, Section 6]

- A pretreatment station is constructed to include installations for temporary aggregation, segregation and crushing, volume and quantity reduction, stabilization, and maintenance of the wastes;
- Incompatible wastes are placed in different zones/cells of the landfill;

Notes: A dividing space should be provided between each zone/cell. If the site is too small, incompatible wastes may be kept in containers prior to being placed in the landfill. The materials in the containers must be compatible with other materials with which they may come into contact, and must be non-corrosive.

- Materials used for the construction of landfill sites are compatible with all the potential waste with which they may come into contact, and are corrosive-resistant;
- The saturation and permeability coefficient of the natural foundation layer is less than 1.0×10^{-7} centimeter per second, and the thickness of the layer is more than 2 meters;
- The types of liner material used (natural liner, composite liner or double artificial liner) are based on the geology of the natural foundation layer;
- A leachate collection system, rainwater collection and discharge system, and exhaust emission system are installed;
- If a natural liner or composite liner is used, a centralized leachate collection and discharge system is installed;

Notes: The system should consist of a bottom layer water discharge system, water collection and discharge piping, and a water collection well.

- If a double artificial liner is used, an auxiliary collection and discharge system is installed in addition to the centralized leachate collection system;

Notes: The system should consist of a bottom layer water discharge, slope layer water discharge, water collection and discharge piping and water collection well.

The water collection well of the auxiliary collection and discharge system is mainly used for leakage monitoring.

- Permeability of the water discharge layer is more than 0.1 centimeter per second;
- Periphery of the landfill site is fenced with vegetation to a width of at least 10 meters; and
- The assurance of site quality is approved by the competent department of environmental protection prior to construction?

4.65 Does the facility ensure that the management of landfill site operations complies with the following requirements: [[Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001, Section 7](#)]

- Hazardous wastes acceptance requirements are in place;
- Wastes are compacted and the thickness of the layer is determined by the volumes and the site conditions;
- The landfill is covered every day;
- Exits and entrances of the landfill site are unobstructed at all seasons of the year;
- The slope ratio of the waste pile in the landfill is 1:3 (vertical: horizontal);
- Signs complying with Standard *GB 15562.2-1995* in Appendix 4-C are posted;
- A record of the landfill site operation for every working day is kept that includes parameters of facility technical control, sources of wastes, types of wastes, location in the landfill, and environmental monitoring data; **<RECORD KEEPING>**
- Wastes are protected from rain before they have been covered in the landfill; and
- Operation management personnel are well trained prior to commencing work?

4.66 Does the facility ensure that pollution control at the landfill site complies with the following requirements: [*Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001, Section 8*]

- Leachate is collected, treated, and meets the requirements for Category I pollutant maximum permissible discharge concentrations and the standard of Category II pollutant maximum permissible discharge concentrations specified in the *Integrated Wastewater Discharge Standard - GB 8978-1996* (see Appendix 5-C in Section 5.0 of this protocol) prior to discharge;
- Groundwater pollution assessment methods and limits comply with *Quality Standard for Groundwater - GB/T 14848-93*;
- Gas emissions comply with *Integrated Emission Standard for Air Pollutants - GB 16297-1996* (see Table 2 in Appendix 3-D in Section 3.0 of this protocol); and
- Noise levels comply with *GB 12348* (see Table 7-1 in Section 7.0 of this protocol)?

4.67 If the facility is capping the landfill site, does it ensure that the top cover of the site meets the following requirements: [*Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001, Section 9*]

- Consists of several layers;
- The bottom layer has a thickness of more than 20 centimeters, and a slope of more than 2 percent;
- The seepage-proof layer is as follows:
 - If made of natural material: The seepage-proof layer is more than 50 centimeters thick, with a permeability coefficient of less than 10^{-7} centimeter per second; or
 - If composite seepage-proof layer is used, the artificial material layer is more than 1.0 millimeter thick and the thickness of the natural material layer is more than 30 centimeters;
- The water discharge layer and water discharge piping system are able to accommodate the magnitude of a 50-year rain event;

- The protection layer has a thickness of more than 20 centimeters, and consists of coarse cobbles; and
- The re-vegetation layer has a thickness of more than 60 centimeters, with a slope of not more than 33 percent?

Notes: The water discharge layer and water discharge piping system have the same requirements as the bottom leachate collection and discharge system (see the notes to Question [4.64](#)).

IX. Medical Waste Management

Notes: Medical waste is classified as hazardous waste under *Code HW01* in the [National Catalogue of Hazardous Wastes](#).

This subsection is only applicable to facilities with an in-house medical clinic, facility or treatment center for treating their own employees.

4.68 If the facility generates medical wastes, are the following plans in place: [\[Regulations on the Management of Medical Waste, Section 8\]](#)

- Safe storage rules for medical wastes; and
- Emergency response plan?

Notes: The facility establishes its own rules.

4.69 If the facility generates medical wastes, does it ensure that the following occupational hygiene measures are provided to employees who are responsible for the collection, transport, storage and disposal of these wastes: [\[Regulations on the Management of Medical Waste, Section 10\]](#)

- Personal protective equipment;
- Periodic medical check-ups; and
- Vaccinations, if necessary?

Notes: No frequency for medical check-ups is specified.

- 4.70** If the facility generates medical wastes, does it keep a medical waste record that includes the following information: [Regulations on the Management of Medical Waste, Section 12] and [Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 24] **<RECORD KEEPING>**
- Source of generation;
 - Types of waste;
 - Weight or quantity;
 - Time of transfer;
 - Method of disposal;
 - Final destination; and
 - Signature of the responsible employee?
- 4.71** Are medical waste records kept for at least 3 years? [Regulations on the Management of Medical Waste, Section 12] **<RECORD KEEPING>**
- 4.72** If an incident occurs where medical wastes leak and/or are dispersed, does the facility ensure that the following parties are notified: [Regulations on the Management of Medical Waste, Section 13] and [Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 7]
- The health and environmental protection department at the provincial level, within 48 hours; and
 - Any potential institution or individual that may be affected (no timing is specified)?
- 4.73** If medical wastes have leaked/spilled, or been dispersed, does the facility conduct an investigation of the incident and submit the investigation report to the health and environmental protection department at the provincial level? [Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 7]

- 4.74** If the facility generates medical wastes, does it comply with the following storage requirements: [Regulations on the Management of Medical Waste, Section 14] and [Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 26]
- Medical wastes are not dumped and/or stored outside the designated medical wastes storage area; and
 - Medical wastes are not mixed with other wastes and/or domestic wastes?
- 4.75** If the facility generates medical wastes, does it ensure that such wastes are not disposed of during waste transfers? [Regulations on the Management of Medical Waste, Section 14]
- 4.76** If the facility generates medical wastes, does it ensure that they are transferred to a temporary storage area on a designated schedule and by a designated route? [Regulations on the Management of Medical Waste, Section 18] and [Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 16]
- 4.77** If the facility generates medical wastes, does it ensure that waste transfer equipment meets the following criteria: [Regulations on the Management of Medical Waste, Section 18] and [Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 19]
- Leak-resistant;
 - Able to contain such waste without allowing dispersal of the waste;
 - Free of sharp corners and edges;
 - Easily assembled and dismantled; and
 - Easily cleaned?
- 4.78** Does the facility ensure that equipment used for the transfer of waste to temporary storage areas is cleaned and sterilized immediately after use? [Regulations on the Management of Medical Waste, Section 18] and [Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 19]

4.79 If the facility generates medical wastes, does it comply with the following storage requirements: [Regulations on the Management of Medical Waste, Section 17] and [Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 20]

- A temporary medical wastes storage area is in place;
- Medical wastes are not stored in the open air; and
- Medical wastes are not stored for more than two days in a temporary storage area?

4.80 Does the facility ensure that temporary medical waste storage areas meet the following criteria: [Regulations on the Management of Medical Waste, Section 17] and [Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 21]

- Are located away from medical treatment areas, food processing areas, activity areas, and domestic waste storage areas;
- Enable easy access for medical waste transporters and transport equipment or vehicles;
- Clearly visible/obvious medical waste caution signs and “No smoking, eating and drinking” signs are posted;
- Effective measures are in place to prevent:
 - Infiltration by pests (mice, insects, cockroaches);
 - Theft; and
 - Access by children;
- Easily allow regular cleaning and sterilizing operations;
- Are out of direct sunlight; and
- Have strict security measures in place to prevent unauthorized personnel from having contact with the waste?

4.81 If the facility generates medical wastes and is located in an area without a centralized medical waste collection facility, does it manage such waste in accordance to the following principles: [\[Regulations on the Management of Medical Waste, Section 21\]](#) and [\[Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 27\]](#)

- Disposable medical equipment and waste that can easily cause injury is sterilized, bent/misshapen (to make further use impossible), and disposed of;
- Wastes that can be burned are burnt immediately; and
- Wastes that cannot be burned are sterilized and landfilled?

Notes: The facility must comply with any requirements prescribed by the local health and environmental protection departments.

4.82 If the facility generates medical wastes, does it ensure that such wastes are classified according to the [Catalogue on Medical Wastes Classification](#) in Table 4-5? [\[Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 10\]](#) and [\[Regulations on the Management of Medical Waste, Section 16\]](#)

4.83 Does the facility ensure that classified medical wastes are stored in packages or containers that comply with the following criteria: [\[Regulations on the Management of Medical Waste, Section 16\]](#) and [\[Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 11\(1\)\]](#)

- Are leak and cut resistant;
- Are hermetically sealed; and
- Comply with the construction standards of the [Standard for Medical Waste Packages, Containers and Warning Labels - HJ 421-2008](#)?

4.84 Does the facility ensure that all medical waste packages and containers have the following labels: [\[Regulations on the Management of Medical Waste, Section 16\]](#) and [\[Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 15\]](#)

- A “Medical Waste” warning label as in Appendix 4-E; and
- A label written in the Chinese language with the following information:
 - Source of generation;
 - Date of generation;

- Type of waste; and
- Any special/additional indications?

Notes: See the Ministry of the Environment website indicated in the introductory notes to this protocol section for access to the *Standards for Packaging, Containers and Warning Signs - HJ 421-2008*.

4.85 Does the facility ensure that all medical waste packages and containers are sealed tightly once they reach 75% of their storage capacity? [[*Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 13*](#)]

4.86 Does the facility ensure that medical wastes in the temporary storage area are transferred to a centralized medical waste collection facility approved by the people's government at the provincial level? [[*Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 23*](#)]

4.87 Does the facility ensure that the manifest for the transfer of hazardous waste is completed prior to transfer to an approved centralized medical waste collection facility? [[*Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 23*](#)]

Notes: The hazardous waste transfer manifest system is discussed in detail in the Subsection entitled, "Hazardous Waste Manifests."

4.88 Does the facility ensure that temporary storage areas and facilities for medical wastes are immediately cleaned and sterilized after the medical wastes have been transferred out? [[*Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 25*](#)]

4.89 If the facility generates medical wastes, does it provide information and training to its employees who are involved in the collection, transport, storage and disposal of this waste, and does it ensure the following topics are covered: [[*Regulations on the Management of Medical Waste, Article 9*](#)] and [[*Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Article 9 & Article 29*](#)]

- Relevant regulations and skills;
- Safety and protective measures; and
- Emergency response?

X. Radioactive Waste Management

4.90 Does the facility classify radioactive wastes during collection and handling based on the following characteristics: [Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources - GB 18871-2002, Sections 8.5.2 & 8.5.3] and [Measures on Management of Urban Radioactive Waste, Article 14]

- Type of radionuclides;
- Radionuclide content in the waste;
- Half-life of the radionuclides;
- Concentration of radionuclides;
- Volume of the wastes; and
- Difference in the physical and chemical characteristics of the wastes, such as combustibility?

Notes: Information on classification of levels of radioactivity is given in [Classification of Radioactive Waste - GB 9133-1995]; information on classification by half-life is given in the [Measures on Management of Urban Radioactive Waste]. Figure 1 and Article 3 of [Classification of Radioactive Waste - GB 9133-1995] classify radioactive waste as high-level, medium-level, and low-level.

The half-life characteristics of urban radioactive waste is categorized as follows: [Measures on Management of Urban Radioactive Waste, Article 7]

- Short half-life waste: $T_{1/2}$ less than or equal to 60 days;
- Medium half-life waste: 60 days is less than $T_{1/2}$ is less than or equal to 5.3 years; and
- Long half-life waste: $T_{1/2}$ is greater than 5.3 years.

4.91 If the facility discharges radioactive substances to the environment, does it comply with the following requirements: [Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources - GB 18871-2002, Sections 8.6.1] and [Law of the People's Republic of China on the Prevention and Control of Radioactive Pollution, Article 42]

- The discharge is approved by the local regulatory authority;
- The total discharge quantity and discharge concentration are within the limits specified by the local regulatory authority;

Notes: The facility must submit an application to the department responsible for environmental impact assessment for the discharge quantity and concentration of radionuclides. [[*Law of the People's Republic of China on the Prevention and Control of Radioactive Pollution, Article 41*](#)]

- Monitoring and control devices measure discharge flow rate and discharge concentrations to ensure a controlled discharge;
- Radioactive liquid waste is discharged through a trough; and

Notes: Liquid radioactive waste may not be discharged through seepage wells and pits, crevices and limestone caves. [[*Law of the People's Republic of China on the Prevention and Control of Radioactive Pollution, Article 42*](#)]

- Public exposure caused by the discharge meets the dosage limits indicated in the notes below?

Notes: The dosage limits for public exposure are as follows: [[*Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources - GB 18871-2002, Section B1.2.1*](#)]

- Annual effective dose: 1 mSv;
- Under special circumstances, if the average annual effective dose (for five consecutive years) does not exceed 1 mSv, the effective dose of a certain year can be increased to 5 mSv;
- Annual equivalent dose to lens of eye: 15 mSv; and
- Annual equivalent dose to skin: 50 mSv.

4.92 If the facility discharges radioactive materials in liquid or gaseous form to the environment, does it complete the following tasks: [[*Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources - GB 18871-2002, Section 8.6.3*](#)]

- Identifies the material's characteristics and the radioactivity of the discharge;
- Identifies possible discharge locations and sources;

- Identifies via environmental investigations, pre-operational experiments or mathematical simulations, all major exposure routes that may cause public exposure due to discharged radionuclides; and
- Estimates the potential critical group exposure dosages that may be caused by the discharges?

Notes: "Critical group" is a group of members of the public, which is reasonably homogeneous with respect to its exposure for a given radiation source and given exposure pathway, and is typical for individuals receiving the highest effective dose or equivalent dose by a given exposure pathway from a given source. [[Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources - GB 18871-2002, Appendix 5.16](#)]

4.93 Is a report on the results of the tasks listed in Question [4.92](#) submitted to the local regulatory authority? [[Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources - GB 18871-2002, Section 8.6.3](#)]

4.94 Does the facility ensure that radioactive liquid waste is not discharged into any ordinary sewer unless the capacity of the sewer is 10 times the discharge flow, and the waste has been determined by the local regulatory authority to be low-level radioactive liquid waste that complies with the following requirements: [[Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources - GB 18871-2002, Section 8.6.2](#)]

- The total radioactivity per monthly discharge does not exceed $10\text{ALI}_{\min}$;
- The activity of each discharge does not exceed $1\text{ALI}_{\min}$; and
- Each discharge is flushed with a volume of water at least 3 times the volume of the discharge?

Notes: Annual limit of intake (ALI) is the derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. $\text{ALI}_{\min}$ is the smaller value between the ingestion and inhalation value of the occupational radiation. ALI is presented in Attachment B of the [Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources - GB 18871-2002](#). (This document has not been included due to protocol scope limitations and its length.)

4.95 If the facility generates radioactive solid waste, does it comply with the following disposal requirements: [[Law of the People's Republic of China on the Prevention and Control of Radioactive Pollution, Article 43 & 45](#)]

- Waste is not disposed of in inland or ocean waters;
- Waste is appropriately treated prior to being sent for disposal; and
- Waste is sent to disposal areas designated for radioactive solid waste?

XI. Urban Radioactive Waste

Notes: This subsection is applicable to all facilities that generate radioactive waste.

“Urban radioactive waste” is radioactive waste usually generated from sources such as: [\[Measures on Management of Urban Radioactive Waste, Article 8\]](#)

- Contaminated materials, such as metals and personal protective equipment;
- Contaminated equipment, instruments and tools;
- Sparsely distributed amounts of low-level radioactive waste liquids and solids;
- Waste experimental specimens (animals and plants);
- Waste nuclear sources; and
- Organic scintillation fluid containing radionuclides with an activity greater than 37 Bq/L, 1x10 Ci/L.

4.96 If the facility generates radioactive waste, does it ensure that the waste is sent to an urban radioactive waste management entity? [\[Measures on Management of Urban Radioactive Waste, Article 12\]](#)

4.97 If the facility generates radioactive waste, does it register with the environmental protection department in the province, autonomous region, or municipality that is directly under the control of the central government level? [\[Measures on Management of Urban Radioactive Waste, Article 13\]](#)

4.98 Does the facility ensure that it complies with the following requirements pertaining to the collection of radioactive waste: [\[Measures on Management of Urban Radioactive Waste, Article 14\]](#)

- Radioactive waste is not mixed with general waste;

- Waste radioactive sources are stored separately from general radioactive waste;
- Organic scintillation liquid containing radionuclides is stored in stainless steel or glass cylinders; and
- Radioactive waste is stored in a designated area and the area is posted with an ionizing radiation warning sign?

4.99 Does the facility ensure that the packaging of radioactive wastes complies with the following requirements: [[*Measures on Management of Urban Radioactive Waste, Article 15*](#)]

- Specialized plastic bags for storage of radioactive waste are sealed and do not leak;
- Radioactive waste with sharp or pointed ends is enclosed in a hard paper box or other packaging prior to be placed in a plastic bag;
- The surface dose ratio of each waste package does not exceed 0.1mSv/h (10mrem/h);
- The volume of each waste package does not exceed 30L; and
- The weight of each waste package does not exceed 20kg?

4.100 Does the facility ensure that it complies with the following radioactive wastes storage requirements: [[*Measures on Management of Urban Radioactive Waste, Article 16*](#)]

- The waste is dry and the amount of free liquid does not exceed 1% of the volume of the waste;
- The waste is of a stable character, without any volatile, strong oxidizing agents, or explosive or corrosive matter;
- Waste radioactive sources are stored in a container;
- Sealed sources that are damaged are re-packed and appropriately relabeled;

- Contamination of the external surface of the packing does not exceed the following:
 - 0.4 Bq/cm² for beta, gamma and low toxicity alpha emitters; and
 - 0.04 Bq/cm² for all other alpha emitters; and
- Radioactive sources that are temporarily not being used are stored in a waste warehouse?

XII. Other Industry-Specific Waste Management Requirements

4.101 If the facility is a shipyard, dockyard, or oil depot, has it installed equipment of an appropriate nature and scale to collect and handle oil residue and waste oil, industrial liquid waste, and ship refuse? [*Regulation on the Management Concerning the Prevention and Control of Marine Environmental Damage Caused by Pollution from Coastal Construction Projects, Articles 16 and 18*]

Notes: The term “appropriate nature and scale” is not defined in the Regulation.

XIII. Requirements for the Import of Solid and Hazardous Wastes

Notes: Imported solid wastes that may be used as raw materials are classified into two categories: restricted import, and automatic import license. Specific measures for the management of imported wastes are established by the State Environmental Protection Administration, the General Administration of Customs, the General Administration of Quality Supervision, Inspection and Quarantine, and the Ministry of Commerce. [*Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 25*]

Facilities that plan to use imported waste as part of their raw materials must produce an environmental risk assessment, submit it to the local administrative departments of environmental protection at the municipal and provincial levels and, following incorporation of their comments, submit the assessment report to the Ministry of Environmental Protection. [*Interim Provisions on the Environmental Protection Management of Waste Imports, Article 24*]

The *Environmental Protection Regulation on the Management of Imported Waste Iron and Steel (Trial Implementation)* restricts import of scrap iron and steel to licensed primary industries, scrap distribution entities, metal reclaimers, and certain foreign equipment refurbishing enterprises. [*Environmental Protection Regulation on the Management of Imported Waste Iron and Steel (Trial Implementation), Article 2*]

- 4.102** Does the facility prohibit the import of wastes listed in the [Catalogue of Solid Wastes Prohibited from Import](#) (Appendix 4-F)? [[Catalogue of Solid Wastes Prohibited from Import](#)]
- 4.103** If the facility plans to import wastes that are listed under the [Catalogue of Solid Wastes Restricted from Import for Raw Materials](#) (Appendix 4-F), has it obtained approval from the environmental protection departments and foreign trade departments of the State Council? [[Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 25](#)]
- 4.104** If the facility plans to import wastes that are listed in the [Catalogue of Solid Wastes that are Automatically Approved for Import for Use as Raw Materials](#) (Appendix 4-F), has it completed the auto-permitting procedures? [[Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 25](#)]

Notes: The application requirements/procedures for import of the wastes under the [Catalogue of Solid Wastes Restricted from Import for Raw Materials](#) and the [Catalogue of Solid Wastes that are Automatically Approved for Import for Use as Raw Materials](#) are provided in the [Notice on Import of Solid Waste Used as Raw Materials](#).

- 4.105** If the facility imports any waste, does it prohibit the import of any wastes that are not listed in Appendix 4-F? [[Interim Provisions on the Environmental Protection Management of Waste Imports, Article 8](#)]
- 4.106** Does the facility submit a quarterly Reporting Form of Imported Wastes based on its waste importation status, to the local administrative department on environmental protection above the municipal level? [[Interim Provisions on the Environmental Protection Management of Waste Imports, Article 22](#)]
- 4.107** If the facility uses imported wastes as raw materials in its production processes, does it comply with the requirements in its Environmental Risk Report and with any conditions further specified by the authorities? [[Interim Provisions on the Environmental Protection Management of Waste Imports, Articles 22 and 24](#)]
- 4.108** Has the facility received an Approval Certificate on Importing Wastes from the State Environmental Protection Administration (SEPA) for the importation, operation, processing and utilization of any wastes listed in Appendix 4-F? [[Interim Provisions on the Environmental Protection Management of Waste Imports, Article 26](#)]

Notes: The *Approval Certificate on Importing Wastes* is valid for one year. [[Interim Provisions on the Environmental Protection Management of Waste Imports, Article 20](#)]

Imported waste must have a certificate of approval from the exporting country, including pre-shipment inspection certifications stating that the imported waste meets quality and other requirements such as the *Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal* and other documents necessary for the import inspection authorities. [[*Interim Provisions on the Environmental Protection Management of Waste Imports, Supplementary, Article 4*](#)]

- 4.109** Was a notification of import of wastes submitted to the commodity inspection authorities at least 10 days prior to arrival of waste at the port? [[*Interim Provisions on the Environmental Protection Management of Waste Imports, Supplementary, Article 5*](#)]

Notes: When waste is passed by the Chinese import inspection authorities, it will be issued an inspection notice. Any problems will be promptly notified to the customs authority and the Ministry of Environmental Protection. Shipments lacking a certificate of approval for import may not be retained in bonded customs warehouses. [[*Interim Provisions on the Environmental Protection Management of Waste Imports, Supplementary, Articles 6 and 7*](#)]

The export of wastes is subject to the [*Administrative Measures for Examination and Approval of the Export of Hazardous Wastes*](#). See the Subsection entitled, “Transboundary Movement of Hazardous Wastes.”

XIV. Transboundary Movement of Hazardous Wastes

Notes: Facilities that generate hazardous wastes within the territory of the People’s Republic of China are subject to a general duty-of-care to ensure the environmentally sound disposal of such wastes within China to the best of the facility’s abilities. The goal of this duty is to reduce export volume and reduce environmental risk in transboundary movements of hazardous wastes. [[*Administrative Measures for Examination and Approval of the Export of Hazardous Wastes, Article 2*](#)]

The term “hazardous wastes” as mentioned in this subsection refers listed and characteristic hazardous wastes, as defined in the Subsection entitled, “General Hazardous Waste Management.”

This subsection applies to the export examination, approval, and administration of the following wastes: [[*Administrative Measures for Examination and Approval of the Export of Hazardous Wastes, Article 3*](#)]

- “Hazardous wastes,” as defined in China and as established in the national legislation of the contracting import or transit parties; and
- “Other wastes,” as defined in the *Basel Convention*.

See <http://www.basel.int/convention/about.html> (last accessed in June 2010) for the full text of the Basel Convention and information on its signatories and ratifications.

4.110 Does the facility prohibit the export of hazardous wastes to any non-contracting parties to the *Basel Convention*? [[*Administrative Measures for Examination and Approval of the Export of Hazardous Wastes, Article 2*](#)]

4.111 If the facility generates, collects, stores, disposes of, or uses hazardous goods and it intends to export hazardous wastes to any contracting parties to the *Basel Convention* outside the People's Republic of China, does it obtain approval from the department of environmental protection under the State Council? [[*Administrative Measures for Examination and Approval of the Export of Hazardous Wastes, Articles 3 and 4*](#)]

Notes: An Approval Notice for the export of hazardous wastes is valid for a maximum of one year. [[*Administrative Measures for Examination and Approval of the Export of Hazardous Wastes, Article 11*](#)]

4.112 If the facility has received an Approval Notice for the export hazardous wastes, does it reapply for approval whenever any of the following circumstances occur: [[*Administrative Measures for Examination and Approval of the Export of Hazardous Wastes, Article 10*](#)]

- A change or addition to the type or quantity of hazardous wastes to be exported;
- A change of the exporter, disposer, or user in the State (region) of import;
- A change of the State (region) of import or the State (region) of transit;
- A change in the purpose of export; and/or
- A change in the time frame of export?

4.113 Does the facility complete the “Manifest Forms-Transboundary Movement of Hazardous Wastes” in duplicate for each batch of hazardous wastes exported, and are the copies distributed as follows: [[*Administrative Measures for Examination and Approval of the Export of Hazardous Wastes, Article 10*](#)] **<RECORD KEEPING>**

- One copy is submitted to the administrative department of environmental protection under the State Council; and
- The duplicate copy is kept by the facility for at least five years, or longer if instructed to do so by the administrative department of environmental protection under the State Council?

XV. Control of Electronic Waste

Notes: The following definitions apply to this subsection: [[*Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes, Article 25*](#)] and [[*Waste Electrical and Electronic Product Disposal and Recycling Management Regulations, Article 2*](#)]

- “Disassembly” refers to the activity of break-up and disintegration of electronic waste through artificial or mechanical means for the purpose of utilizing, storing, or disposing of the electronic waste; this definition excludes demolition and disassembly during repair, maintenance and refurbishment activities;
- “Disposal” refers to the disassembly of waste electrical and electronic products the extraction of substances to be used as raw materials or fuel from them and the reduction of the quantity of waste electrical and electronic products by changing their physical and chemical properties, reducing or eliminating their hazardous elements, and disposing of them in landfills in compliance with the requirements. (This definition does not include maintenance, or reconditioning and use of products after reconditioning);
- “Electronic waste” refers to discarded electronic and electrical products or electronic and electrical equipment (referred to as “products or equipment”), their discarded parts and components, as well as the articles and substances that are subject to the management of electronic waste as prescribed by the State Environmental Protection Administration together with other relevant departments; this definition includes obsolete products or equipment generated by industrial production, obsolete semi-finished products and residues, obsolete products generated during maintenance, repair and refurbishment of products or equipment, products or equipment discarded in daily life or in the activities of providing services for daily life, as well as products or equipment that are prohibited from being produced or imported by any law or regulation;
- “General Hazardous Waste Management” refers to the management of hazardous electronic waste that includes products containing lead-acid batteries, nickel-cadmium batteries, mercury switches, cathode ray tubes, and PCB-containing capacitors;
- “Hazardous electronic waste” refers to hazardous electronic waste that is listed in the national inventory of hazardous waste or that is classified as a characteristic hazardous waste according to the standards prescribed by the state;
- “Industrial electronic waste” refers to electronic waste generated in industrial production activities, and includes electronic waste generated by industrial and commercial facilities during maintenance, refurbishing; and

- “Utilization” refers to the activity of extracting substances from electronic waste as raw materials or fuels, but does not include maintenance, refurbishment or remanufacturing of products or equipment.

The *First List of Controlled Electronic Information Products (Draft)* (电子信息产品污染控制重点管理目录 (第一批)) was issued for comment but not finalized or promulgated. No catalogue of products is currently in force.

4.114 If the facility generates and disposes of electronic wastes, does it comply with the following: [\[Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes, Articles 7, 11, 13 and 15\]](#)

- Electronic wastes are not disposed of directly in a landfill; and
- The disposal contractor has been licensed and publicly listed by the local department on environmental protection at or above the county level, for the dismantling, utilization, and disposal of electronic waste?

Notes: The dismantling, utilization, and disposal of electronic waste must be carried out in specialized facilities. Such facilities must be rain-proof and equipped with measures to prevent releases to the soil, as well as with liquid collection facilities. To dismantle electronic waste, the lead-acid batteries, nickel-cadmium batteries, mercury switches, cathode ray tubes, PCB capacitors, and refrigeration agents must first be removed, then subsequently collected, stored, utilized and disposed by category. [\[Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes, Article 11\]](#)

Electronic waste must shipped to specialized facilities for dismantling, utilization, and disposal if the facility is unable to perform the disassembly, utilization and/or disposal in an environmentally sound manner. [\[Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes, Article 15\]](#)

The term “environmentally sound manner” is not defined in the [Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes](#).

See the [Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes](#) (available through http://www.sepa.gov.cn/info/gw/juling/200709/t20070928_109698.htm, last accessed in June 2010) for disposal techniques, monitoring, record keeping, and training requirements for such disposal facilities that are beyond the scope of this protocol. <RECORD KEEPING>

4.115 If the facility generates and disposes of electronic wastes, does it maintain records of the following information for at least 3 years: [Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes, Article 16] **<RECORD KEEPING>**

- Type, weight, or quantity of the industrial electronic waste generated; and
- Manner in which the electronic wastes were handled by the facility, or whether they were transferred to a third party for storage, dismantling, utilization, and/or disposal?

4.116 Does the facility report relevant information about the type, output, whereabouts, dismantling, utilization, storage, and disposal of electronic waste to the environmental protection administrative department under the local people's government at or above the county level? [Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes, Article 16]

Notes: The transfer of discarded intact electronic and electrical products or electronic and electrical equipment or other dangerous electronic waste with lead-acid batteries, nickel-cadmium batteries, mercury switches, cathode ray tubes, and PCB capacitors should comply with Question 4.7 on transfer of solid wastes out of a province, autonomous region, or municipality that is directly under the control of the central government. [Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes, Article 17]

4.117 If the facility produces or imports electronic and electrical products or equipment, has it established a recovery system to recover the discarded products or equipment, and does the system ensure that electronic wastes are stored, utilized or disposed of in an environmentally sound manner? [Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes, Article 14]

Notes: The recovery system must be in accordance with the relevant provisions of the state. [Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes, Article 14] Regulations on recovery of electrical wastes have not been issued as of the date of this protocol.

Table 4-1**Technical and Method Standards Referenced in Section 4.0**

Identification Standards for Hazardous Wastes - Identification for Corrosivity GB 5085.1-2007

Identification Standards for Hazardous Wastes - Screening Test for Acute Toxicity GB 5085.2-2007

Identification Standards for Hazardous Wastes - Identification for Extraction Toxicity GB 5085.3-2007

Identification Standards for Hazardous Wastes - Identification for Ignitability GB 5085.4-2007

Identification Standards for Hazardous Wastes - Identification for reactivity GB 5085.5-2007

Identification Standards for Hazardous Wastes - Identification for Toxic Substance Content - GB 5085.6-2007

Identification Standards for Hazardous Wastes - General Specifications - GB 5085.7-2007

Solid Waste Determination of Total Mercury – Atomic Absorption Spectrometry – GB/T 15555.1-1995

Solid Waste Determination of Copper, Zinc, Lead, Cadmium - Atomic Absorption Spectrometry – GB/T 15555.2

Solid Waste Determination of Arsenic--Silver Diethyldithiocarbamate – Atomic Absorption Spectrometry - GB/T 15555.3-1995

Solid Waste-Determination of Chromium VI-1,5-Diphenylcarbohydrazide – Atomic Absorption Spectrometry - GB/T 15555.4-1995

Solid Waste Determination of Total Chromium-1.5-Diphenylcarbohydrazide – Atomic Absorption Spectrometry - GB/T 15555.5-1995

Solid Waste Determination of Total Chromium - Atomic Absorption Spectrometry - GB/T 15555.6-1995

Solid Waste Determination of Chromium(VI)-Titrimetric Method - GB/T 15555.7-1995

Solid waste-Determination of Total Chromium-Titrimetric Method - GB/T 15555.8-1995

Solid Waste Determination of Nickel - Flame Atomic Absorption Spectrometry - GB / T 15555.9-1995

Solid Waste Determination of Nickel Dimethylglyoxime Spectrophotometry - GB/T 15555.10-1995

Solid Waste -Determination of Fluoride-Ion Selective Electrode Method - GB/T 15555.11-1995

Solid Waste Determination-Glass Electrode Test-Method of Corrosively - GB/T 15555.12-1995

Table 4-2

List of Wastes That May Be Imported for Use as Raw Materials

Class	Custom No.	Type of Waste
1	<u>Animal Waste</u>	
	0506.9010	Waste Bones
2	<u>Smelting Waste</u>	
	2619.0000	Sediment from steel and iron smelting
3	<u>Wood / Lumber Waste</u>	
	4401.3000	Sawdust, waste wood and wood pieces
	4501.9000	Waste cork
4	<u>Recovered Waste Paper or Paperboard / Cardboard</u>	
	4707.1000	Unbleached waste kraft paper and cardboard
	4707.2000	Bleached and uncolored paper
	4707.3000	Waste newspaper, magazines and other printed material
	4707.9000	Other and unclassified waste paper
5	<u>Waste Textile</u>	
	5202.1000	Waste cotton yarn and thread
	5202.9900	Other waste cotton products
6	<u>Metal Products and Waste Metals</u>	
	7204.1000	Iron casting waste
	7204.2100	Waste stainless steel
	7204.2900	Other waste steel alloys
	7204.3000	Waste tin-plated iron and steel
	7204.4100	Waste iron and steel from mechanical processing
	7204.4900	Waste iron and steel not listed above (including rails, etc.)
	7204.5000	Crushed machines, railroad cars
	7401.1000	Copper
	7401.2000	Copper residues
	7404.0000	Waste copper
	7503.0000	Waste nickel
	7602.0000	Waste aluminum
	7902.0000	Waste zinc
	8002.0000	Waste tin
	8103.0000	Waste titanium

Class	Custom No.	Type of Waste
7	<u>Waste Metal Products, Appliances</u>	
		Waste motors
		Waste wire
8	<u>Waste Transportation Equipment</u>	
	8908.0000	Ships to be demolished
9	<u>Special Waste</u>	

Source: Interim Provisions on Environmental Protection Management of Waste Imports, Attachment.

Table 4-3

Groundwater Quality Standards

No.	Parameter	Class I	Class II	Class III	Class IV	Class V
1	Color	5	5	15	25	>25
2	Odor and taste	None	None	None	None	Yes
3	Turbidity	3	3	3	10	>10
4	Visible particulates	None	None	None	None	Yes
5	pH	6.5-8.5	6.5-8.5	6.5-8.5	5.5-8.5 or 8.5-9.0	<5.5 or >9
6	Hardness (CaCO ₃) (mg/L)	150	300	450	550	>550
7	Dissolved solids	300	500	1,000	2,000	>2,000
8	Sulfate (mg/L)	50	150	250	350	>350
9	Chloride (mg/L)	50	150	250	350	>350
10	Iron (mg/L)	0.1	0.2	0.3	1.5	>1.5
11	Manganese (mg/L)	0.05	0.05	0.1	1.0	>1.0
12	Copper (mg/L)	0.01	0.05	1.0	1.5	>1.5
13	Zinc (mg/L)	0.05	0.5	1.0	5.0	>5.0
14	Molybdenum (mg/L)	0.001	0.01	0.1	0.5	>0.5
15	Cobalt (mg/L)	0.005	0.05	0.05	1.0	>1.0
16	Volatile phenol (mg/L)	0.001	0.001	0.002	0.01	>0.01
17	Anionic detergents (mg/L)	Below test threshold	0.1	0.3	0.3	>0.3
18	Permanganate (mg/L)	1.0	2.0	3.0	10	>10
19	Nitrate (as N) (mg/L)	2.0	5.0	20	30	>30
20	Nitrite (as N) (mg/L)	0.001	0.01	0.02	0.1	>0.1
21	Ammonia - nitrogen (mg/L)	0.02	0.02	0.2	0.5	>0.5
22	Fluoride (mg/L)	1.0	1.0	1.0	2.0	>2.0
23	Iodates (mg/L)	0.1	0.1	0.2	1.0	>1.0
24	Cyanide (mg/L)	0.001	0.01	0.05	0.1	>0.1
25	Mercury (mg/L)	0.00005	0.0005	0.001	0.001	>0.001
26	Arsenic (mg/L)	0.005	0.01	0.05	0.05	>0.05
27	Selenium (mg/L)	0.01	0.01	0.01	0.1	>0.1

No.	Parameter	Class I	Class II	Class III	Class IV	Class V
28	Cadmium (mg/L)	0.0001	0.001	0.01	0.01	>0.01
29	Chromium VI (mg/L)	0.005	0.01	0.05	0.1	>0.1
30	Lead (mg/L)	0.005	0.01	0.05	0.1	>0.1
31	Beryllium	0.00002	0.0001	0.0002	0.001	>0.001
32	Barium (mg/L)	0.01	0.1	1.0	4.0	>4.0
33	Nickel	0.005	0.05	0.05	0.1	>0.1
34	Dichlorodiphenyl trichloroethane (DDT)	Below test threshold	0.005	1.0	1.0	>1.0
35	Benzene hexachloride	0.005	0.05	5.0	5.0	>5.0
36	Fecal coliforms (number/L)	3.0	3.0	3.0	100	>100
37	Bacteria Index (number/L)	100	100	100	1,000	>1,000
38	Total α particle activity (Bq/L)	0.1	0.1	0.1	>0.1	>0.1
39	Total β particle activity (Bq/L)	0.1	0.1	0.1	>0.1	>0.1

Notes: The categories assigned are based on the above groundwater parameters. Water for special purposes may be subject to special purpose standards based on the principles of classification. [\[Quality Standard for Groundwater - GB/T 14848-93, Table 5-1\]](#)

Source: Quality Standard for Groundwater - GB/T 14848-93, Table 1.

Table 4-4**Concentration Limits of Contaminants in Hazardous Waste To Be Landfilled**

Number	Materials	Stabilized control limit (milligram per liter)
1	Organic mercury	0.001
2	Mercury and its compound	0.25
3	Lead	5
4	Cadmium	0.50
5	Total Chromium	12
6	Hexavalent chromium	2.50
7	Copper and its compounds	75
8	Zinc and its compounds	75
9	Beryllium and its compounds	0.20
10	Barium and its compounds	150
11	Nickel and its compounds	15
12	Arsenic and its compounds	2.5
13	Inorganic fluoride compounds	100
14	Cyanide	5

Source: Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001, Table 5-1.

Table 4-5

Classification of Medical Waste

Category	Characteristics	Components of Waste or Common Name(s)
Infectious waste	Contaminated with pathogenic microbes, infectious diseases have caused the spread of dangerous medical waste	1. Blood, body fluids and excrement-contaminated items, including: - Cotton dressings, cotton gauze, cotton netting for drainage, and other dressings; - Disposable hygiene products, disposable medical supplies and disposable medical devices; - Discarded clothing; and - Byproducts, including patient blood, body fluids and excrement-contaminated items.
		2. Garbage and trash from medical isolation wards for infectious hospital patients or patients suspected of harboring an infectious disease.
		3. Pathology medium, specimens and species, toxic preservation solutions.
		4. All kinds of medical waste samples.
		5. Abandoned blood serum.
		6. Used single-use medical supplies and medical equipment considered to be infectious waste.
Pathological waste	Waste human and animal carcasses and parts generated in the course of treatment and medical experiments	1. Discarded human tissues and organs from surgeries and clinics.
		2. Animal carcasses from medical laboratory animal institutions.
		3. Pathology samples and biopsies, such as embedded paraffin wax used for diagnosis.
Injurious waste	Medical sharps that may cut or pierce the body	1. Medical needles, suture needles.
		2. Various types of medical sharp instruments, including: scalpels, knives, scalpels, and other instruments.
		3. Slides, test tubes, glass ampoules, etc.

Category	Characteristics	Components of Waste or Common Name(s)
Drug waste	Expired, out-dated, used or contaminated drugs	1. Discarded and outdated medicines, such as antibiotics, and including non-prescription drugs
		2. Discarded cytotoxic and mutagenic drugs, including: - Carcinogenic substances such as azathioprine, Chlorambucil, chlornaphazine, cyclosporine, cyclophosphamide, melphalan, statins, the three phenoxy ammonia, sulfur for Camp; - Suspected carcinogenic substances such as: cisplatin, mitomycin, doxorubicin, phenobarbital, etc.; and - Immunosuppressants.
		3. Discarded vaccines, blood products.
Chemical waste	Discarded toxic, corrosive, flammable and explosive chemicals	1. Discarded chemical reagents from medical imaging and laboratories
		2. Discarded chemical disinfectants, such as peracetic acid and glutaraldehyde.
		3. Discarded mercury sphygmomanometers, mercury thermometers, etc.

Notes: Single-use of health supplies means items that are discarded after one use, and that have had direct or indirect contact with the human body, for the purposes of achieving physical health or used as a daily necessity.

Disposable medical supplies for patients includes single-use medical and nursing supplies used during clinical examinations, diagnosis, treatment, and care, including: examination gloves, suction tubes, vaginal specula, anus mirrors, impression trays, treatment towels, hand-wipes, surgical towels, tongue depressors, hip pads, and other items that come in contact with mucous membranes or skin.

Disposable medical equipment refers medical equipment that comes in contact with the human body for a one-time use, such as apparatus, equipment, material and other items.

Medical and health institution must manage their discarded narcotic, psychiatric, radioactive, toxic and other drugs and related waste in accordance with relevant laws, administrative regulations and relevant state regulations, including standards.

Source: Catalogue on Medical Wastes Classification, Attachment.

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is provided for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter format does not contain the electronic links and other functionality contained in the MS Word version. The following instructions pertain to the fully linked Word version of the AQC.

Each question from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, electronic links back to the original protocol document are provided for quick access to this information when needed. To return to where you were in the AQC after following a link, use the back arrow located on the Audit Quick Check Toolbar.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X's to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

Additional audit questions can be added to the end of the AQC. Examples might include corporate requirements or best management practices. To add more questions, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Continue to sequentially number the questions by putting your cursor in the first column and typing the desired number.

Please Note: Additional rows will be included in the sort function. It is important that you number the questions for the sort functions to work. Please consider the following sort rules when entering custom text.

Sorting Responses

The AQC sort feature is accessed from the IAPC menu item located on the far right on the Main MS Toolbar. Please note the following criteria to take full advantage of this feature.

You can change the column titles as you see fit, but the menus assume that:

- the first column contains the question number and question text;
- the second column is "Not Applicable" (N/A) entries;
- the third column is "Complies" entries; and
- the fourth column is "Does Not Comply" entries.

A question is considered "Complies" if there is any text ("X" or "YES", for instance) in the "Complies" column.

A question is considered "Incomplete" if columns 2 to 4 are all empty.

Only one column should contain a value for any given question.

Click the IAPC menu item and then select one of the following menu choices:

Sort by Question Number

- Sorts the section by question number

Sort with Incomplete first

- Sorts the section with Incomplete first, Does Not Comply next, Complies next, then N/A

Sort with Non-compliant first

- Sorts the section with Does Not Comply first, Complies next, N/A next, then Incomplete

Sort with Compliant first

- Sort the section with Complies items first, Does Not Comply next, N/A next, then Incomplete

Sort with Not Applicable last

- Sort the section with not-applicable items last (Complies first, Does Not Comply next, Incomplete next, then N/A)

For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click the IAPC menu item and choose "Sort with Non-compliant first". Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

Once the completed AQC is sorted, save or print a copy of the results. The AQC can then be re-sorted using a different option.

Section 4 Audit Quick Check

SECTION 4.0 SOLID AND HAZARDOUS WASTE

AUDIT QUICK CHECK

SITE: _____ DATE: _____

ASSESSOR: _____

	Not Applicable	Complies	Does Not Comply
Q4.1 Does the facility ensure that all waste residues and/or liquids from production equipment, facilities, and sewage are collected for treatment and that none are discharged into water bodies or disposed of at random? [<i>Provisions on Environmental Protection Design of Construction Projects, Article 48</i>] See protocol for notes. I. General Waste Requirements Comments:			
Q4.2 If the facility generates, collects, stores, transports and/or disposes of solid wastes or industrial solid wastes, has it adopted measures to prevent pollution of the environment by those wastes? [<i>Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Articles 16, 17 and 30</i>] See protocol for notes. I. General Waste Requirements Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.3 Does the facility ensure that its product packaging is designed to reduce the use of packing materials and the production of packaging wastes? [<i>Law of the People's Republic of China on the Promotion of Cleaner Production, Article 20</i>] See protocol for notes. I. General Waste Requirements Comments:			
Q4.4 If the facility generates industrial solid waste, did it provide information on the quantity, flow path, storage, and disposal of the waste, to the environmental protection department at or above the county level? [<i>Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 32</i>] See protocol for notes. II. Storage and Disposal of Industrial Solid Waste Comments:			
Q4.5 If the facility has closed, suspended use of, or dismantled equipment involved in the prevention and control of pollution by industrial solid waste, did it first receive approval from the environmental protection department at or above the county level prior to doing so? [<i>Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 34</i>] II. Storage and Disposal of Industrial Solid Waste Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.6 If the facility generates industrial solid waste that cannot be temporarily or completely utilized, does it comply with the following requirements: [<i>Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 33</i>] – Sets up storage and disposal facilities or sites; – Stores wastes separately by categories; or – Disposes of wastes in a harmless manner? II. Storage and Disposal of Industrial Solid Waste Comments:			
Q4.7 If the facility transfers solid waste out of a province, autonomous region, or municipality that is directly under the control of the central government, was a report for the storage or disposal of the waste filed with the environmental protection department at the provincial level from which the solid waste was transferred, and was a permit obtained for the transfer of the waste from the environmental protection department of the province that is receiving the waste? [<i>Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 23</i>] II. Storage and Disposal of Industrial Solid Waste Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.8 Does the facility ensure that it does not receive (import) any solid waste originating outside of China unless it is capable of reusing the waste as a raw material and the facility has received a permit to do so from the State Council? [<i>Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Articles 24 and 25</i>] See protocol for notes. II. Storage and Disposal of Industrial Solid Waste Comments:			
Q4.9 If the facility is located along the coastline (i.e., adjacent to the ocean or a tidal waterway), and the industrial waste disposal area used by the facility is located on the coast, have the following environmental protection facilities and features have been installed: [<i>Regulation on the Management Concerning the Prevention and Control of Marine Environmental Damage Caused by Pollution from Coastal Construction Projects, Article 20</i>] – Protective embankments and a sealing layer/ impermeable layer at the base of the disposal area; – A system to channel, collect and dispose of leachate; and – A device or system to vent flammable gases to prevent an explosion? II. Storage and Disposal of Industrial Solid Waste Comments:			
Q4.10 If the facility has a Class I or Class II general industrial solid waste storage and disposal site, does it ensure that the site complies with the following requirements: [<i>Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 5</i>] – Site selection was conducted in accordance with the local urban and rural development collective planning requirements; – The site is located downwind of industrial or residential centers;			

	Not Applicable	Complies	Does Not Comply
– The site is located at least 500 meters away from residential areas; – The foundation load capacity is not exceeded; – The site is not located at/on a fault zone, fault crush zone, limestone cave, natural landslide or mud-rock flow zone; – The site is not located on beaches and floodplains below the highest water level of a river, lake or reservoir; – Site is not located in natural protection zones, scenic spots and other zones that are under protection; – For Class I sites, site selection priority is given to abandoned mining pits or sunken areas; and – For Class II sites, site location is not in a groundwater supply area and the distance between the ground surface level and the groundwater level is more than 1.5 meters? II. Storage and Disposal of Industrial Solid Waste Comments:			
Q4.11 If the facility has a Class I or Class II general industrial solid waste storage and disposal site, does it ensure that the design of the storage and disposal site complies with the following requirements: [<i>Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB18599-2001, Section 6</i>] – The type of construction is appropriate for the type of general industrial wastes; – The storage and disposal site evaluation is included in the Environmental Impact Assessment of the construction project; – Another Environmental Impact Assessment is performed in the case of expansion, re-construction and/or the extension of active duty of the storage and disposal site; – Prevention measures for dust pollution are in place;			

	Not Applicable	Complies	Does Not Comply
– Diversion ditches are installed at the periphery of the storage and disposal site to prevent rainwater runoff from entering the storage and disposal site, to avoid an increased volume from leachate, and to prevent landslides; – Leachate collection and drainage systems are installed; – Dikes, dams or retaining walls are constructed to prevent the release of the general industrial solid wastes and leachate runoff; – Mitigation measures are undertaken to prevent the foundation from sinking, becoming unbalanced or partially sinking; – Mitigation measures are undertaken to prevent self-combustion if the gangue content of sulfur is more than 1.5 percent; and See protocol for notes. – Signs are posted in accordance with <i>Graphical Signs for Environmental Protection - Solid Waste Storage (Disposal) Site - GB 15562.2-1995</i>, as specified in Appendix 4-C? II. Storage and Disposal of Industrial Solid Waste Comments:			
Q4.12 If the facility has a Class II general industrial solid waste storage and disposal site, in addition to the requirements mentioned in the Question 4.11, does it comply with the following measures: [<i>Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 6.2</i>] – If the permeability coefficient of the ground surface level is more than 1.0×10^{-7} centimeter per second, the impermeable layer is made of natural or artificial materials with a thickness that provides a permeability coefficient of 1.0×10^{-7} centimeter per second, equivalent to the thickness of 1.5 meters of clay; – At least three groundwater monitoring wells are installed at the periphery of the storage and disposal site, as follows:			

	Not Applicable	Complies	Does Not Comply
– One baseline/background monitoring well is located along the flow direction of the groundwater and upgradient of the storage and disposal site; – One contamination monitoring well is located along the flow direction of the groundwater and downgradient of the storage and disposal site; and – One contamination dispersion well is located at the periphery of the storage and disposal site where dispersion may occur? See protocol for notes. II. Storage and Disposal of Industrial Solid Waste Comments:			
Q4.13 If the facility has a Class I or Class II general industrial solid waste storage and disposal site, does it ensure that management of operations complies with the following requirements: [<i>Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 7</i>] – Approval has been obtained from the competent administrative department of environmental protection that approved the Environmental Impact Assessment report prior to operations; – Storage and disposal sites for general industrial solid wastes are not used for hazardous wastes and domestic wastes; – The discharge of leachate from the storage and disposal site meets the requirements of the <i>Integrated Wastewater Discharge Standard - GB 8978-1996</i>, see Appendix 5-C in Section 5.0 of this protocol; – The emission of air pollutants meets the requirements for fugitive emissions as specified in Table 2 of the <i>Integrated Emission Standard for Air Pollutants - GB 16297-1996</i>, see Appendix 3-D in Section 3.0 of this protocol; – An inspection and maintenance system is established; – Periodic inspections and maintenance of dikes, dams, retaining walls and diversion ditches are conducted; – A manifest filing system is established on site;			

	Not Applicable	Complies	Does Not Comply
– The type and quantity of the general industrial solid wastes sent to the site are recorded, together with the information listed below: <RECORD KEEPING> – Inspection and maintenance information for all installations and equipment; – Observation and disposal information of foundation sinking, collapse or landslide; and – Monitoring data for leachate and other discharges of treated wastewater and emission of air pollutants; – See protocol for notes. – Graphical signs for environmental protection are inspected annually and maintained according to <i>Graphical Signs for Environmental Protection - Solid Waste Storage (Disposal) Site - GB 15562.2-1995</i> (see Appendix 4-C); and – Class II waste is prohibited from being disposed of at a Class I site? II. Storage and Disposal of Industrial Solid Waste Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.14 If the facility has a Class II general industrial solid waste storage and disposal site, in addition to the requirements mentioned in Question 4.13, does it meet the following requirements: [<i>Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 7.3</i>] – Conducts periodic inspections and maintenance of seepage-proof/impermeable constructions; – Conducts groundwater monitoring (groundwater quality must be determined in accordance with <i>Quality Standard for Groundwater - GB/T 14848-93</i>, see Table 4-3 for parameters); – Conducts periodic inspections and maintenance of leachate collection drainage systems and leachate handling installations; and – Conducts monitoring of leachate and other treated wastewater? II. Storage and Disposal of Industrial Solid Waste Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.15 Does the facility comply with the following requirements when implementing the closure and capping of a Class I or Class II general industrial solid waste storage and disposal site: [<i>Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 8</i>] – The site is closed or capped when the allowable operation period for the site expires, or if the site is unable to accommodate any more incoming waste; – A closure or capping plan is submitted for approval to the competent administrative department for environmental protection above the county level; – A terrace/step is built for every elevation of 3 meters to 5 meters; See protocol for notes. – After the closure or sealing of the site, the facility inspects and maintains the site regularly until it is stabilized; and – Signs are posted that indicate the date of closure? II. Storage and Disposal of Industrial Solid Waste Comments:			
Q4.16 Are industrial solid waste storage and disposal sites filled and/or capped and monitored as follows: [<i>Standard for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes - GB 18599-2001, Section 8</i>] – Class I general industrial solid waste storage and disposal sites are filled with a layer of natural soil, the thickness of which is determined by the grain size of the solid wastes and the type of vegetation planted on it; and – The ground surface of Class II sites has two layers, as follows: – The first layer is a separation layer, with a thickness of 20 to 45 centimeters of compacted clay; and			

	Not Applicable	Complies	Does Not Comply
– The second layer is the covering layer, which uses natural soil and growth of vegetation, whose thickness is determined by the type of vegetation; – Class II sites have leachate monitoring and the discharge of treated water is continued until the water quality is stabilized; and – The groundwater monitoring program at a Class II site is continued after closure? II. Storage and Disposal of Industrial Solid Waste Comments:			
Q4.17 If a facility collects, stores or disposes of hazardous wastes, has it received an operating license for the activity? [<i>Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 57</i>]; [<i>The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 6.1</i>] and [<i>Measures on the Administration of Hazardous Wastes Operating License, Article 2</i>] See protocol for notes. III. General Hazardous Waste Management Comments:			
Q4.18 Does the facility ensure that any firm contracted by the facility for services relating to the collection, storage, or disposal of hazardous waste possesses the appropriate business license issued by the environmental protection administration? [<i>Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 57</i>] See protocol for notes. III. General Hazardous Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.19 If the facility generates hazardous wastes, does it ensure it does not use the technologies and installations that are listed in the phase-out category in the <i>Guidance Catalogue for the Adjustment of Industrial Structure (2005)</i> in Section 2.0 of this protocol, Appendix 2-B? [<i>The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 2.1</i>] See protocol for notes. III. General Hazardous Waste Management Comments:			
Q4.20 If the facility generates hazardous wastes, does it post signs to indicate the presence of hazardous wastes? [<i>The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 2.2</i>] III. General Hazardous Waste Management Comments:			
Q4.21 Does the facility ensure that hazardous wastes generated by service industries and/or offices (such as discarded batteries or fluorescent light bulbs) are segregated from domestic wastes during waste collection? [<i>The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 3.3</i>] III. General Hazardous Waste Management Comments:			

		Not Applicable	Complies	Does Not Comply
Q4.22 If the facility is temporarily unable to recycle or handle the hazardous wastes that it generates, does it implement the following measures: [<i>The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 6.1</i>] – Sets up special storage facilities for the hazardous waste and posts hazardous wastes signs; or – Contracts a permitted hazardous waste company to store the wastes? See protocol for notes. III. General Hazardous Waste Management Comments:				
Q4.23 Does the facility ensure that it does not discharge or bury extremely toxic, soluble waste residues (e.g., mercury, cadmium, arsenic, chromium, lead, cyanide, and yellow phosphorus), and that such waste residues are disposed of properly? [<i>Provisions on Environmental Protection Design of Construction Projects, Article 50</i>] III. General Hazardous Waste Management Comments:				
Q4.24 Do sites for depositing extremely toxic residues meet the following criteria: [<i>Provisions on Environmental Protection Design of Construction Projects, Article 50</i>] – Are waterproof and protected against seepage and leachate loss; and – Include facilities for collecting and monitoring rainwater or leachate from deposit sites? III. General Hazardous Waste Management Comments:				

	Not Applicable	Complies	Does Not Comply
Q4.25 If the facility possesses lead batteries, are they recycled? [<i>The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 9.4.4</i>] See protocol for notes. III. General Hazardous Waste Management Comments:			
Q4.26 Does the facility ensure that hazardous and toxic waste storage areas meet the following criteria: [<i>Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 58</i>] and [<i>Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Sections 4.5, 6.2.6 and 7.6</i>] – Incompatible hazardous wastes are stored separately; and – Hazardous wastes are stored separately from non-hazardous wastes? III. General Hazardous Waste Management Comments:			
Q4.27 If the facility generates flammable or explosive hazardous waste that can emit toxic gas under normal atmospheric temperature and pressure, does it ensure that the following conditions are met: [<i>Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 4.2</i>] – Wastes are treated and stabilized prior to storage; or – The wastes are stored using means appropriate for flammable or explosive hazardous waste? III. General Hazardous Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.28 If the facility generates hazardous wastes, does it ensure that the hazardous wastes are segregated and collected in approved containers according to their classification? [<i>The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 3.1</i>] and [<i>Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 4.4</i>] See protocol for notes. III. General Hazardous Waste Management Comments:			
Q4.29 Does the facility ensure that containers used for hazardous waste storage comply with the following: [<i>Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 5</i>] – Only approved containers are used; – Materials used to construct the containers are sufficiently durable and strong; – Materials used to construct the containers and their linings are compatible with the hazardous waste to be stored; – Containers are resistant to corrosion and pressure and are sealed; – Containers are affixed with a distinct label; and – Containers are in a good condition? See protocol for notes. III. General Hazardous Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.30 Does the facility ensure that labels on hazardous waste containers include the following information: [<i>The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 3.2</i>] – Name of the hazardous waste; – Weight of the hazardous waste; – Composition of the hazardous waste; – Characteristics of the hazardous waste; and – The emergency and rescue measures to be implemented in the event of a pollution incident (e.g., leaks or spills)? III. General Hazardous Waste Management Comments:			
Q4.31 If the facility stores liquid or semi-solid hazardous waste in a container, does it ensure that the following conditions are met: [<i>Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 4.7</i>] – There is sufficient space in the container; and – A head space of at least 100 millimeters and above is retained between the top of container and the liquid surface (ullage)? III. General Hazardous Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.32 If the facility generates unwanted dangerous chemicals, has it established the following: [<i>Prevention and Control Measures on Environmental Pollution of Unwanted Dangerous Chemicals, Article 9</i>] – A management system for disposing of unwanted dangerous chemicals; – A plan for management of unwanted dangerous chemicals and for reporting to the environmental department; and – An information file on unwanted chemicals? IV. Unwanted Dangerous Chemicals Comments:			
Q4.33 If the facility generates unwanted dangerous chemicals, has it furnished the following information to the local environmental department above the county level pertaining to the chemicals generated: [<i>Prevention and Control Measures on Environmental Pollution of Unwanted Dangerous Chemicals, Article 9</i>] – Chemical types, trade/common name; – Composition; – Characteristics; – Amount of production; – Flow of chemical transfer; – Storage information; – Usage; – Disposal method; and – Material Safety Data Sheet (MSDS)? IV. Unwanted Dangerous Chemicals Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.34 If the facility manufactures, stores or uses dangerous chemicals and undergoes a change of production or ceases production or operations, does it comply with the following requirements: [<i>Prevention and Control Measures on Environmental Pollution of Unwanted Dangerous Chemicals, Article 14</i>] – Ensures that production facilities/equipment, storage facilities/equipment, stored product, and raw materials are properly disposed of; – Conducts soil and groundwater investigations at the facility area; and – Submits an environmental risk assessment report to the environmental protection bureau? See protocol for notes. IV. Unwanted Dangerous Chemicals Comments:			
Q4.35 If the facility generates hazardous waste, does it construct a designated hazardous waste storage area and installation? [<i>Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 4.1</i>] See protocol for notes. V. Hazardous Waste Storage Areas Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.36 Does the facility ensure that the boundaries of the hazardous waste storage areas are built with retaining walls or other means of protection, such as railings? [<i>Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 8.1.2</i>] V. Hazardous Waste Storage Areas Comments:			
Q4.37 Does the facility ensure that sites selected for hazardous waste storage areas comply with the following requirements: [<i>Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 6.1</i>] – Have a stable geological structure, with earthquake intensity of less than 7 degrees; – Are located where the lowest point of the area is higher than the maximum groundwater level; – Are located 800 meters away from residential areas, and 150 meters away from surface water areas; – Avoid limestone cave areas or areas that potentially suffer from serious natural disasters (e.g., flood, landslide, mud-rock flow and tide); – Are located beyond the protection areas for flammable and explosive dangerous goods warehouses and high-voltage electric current lines; and – Are located downwind of residential areas? V. Hazardous Waste Storage Areas Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.38 Does the facility ensure that hazardous waste storage areas comply with the following additional requirements for each area: [<i>Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 6.1 and 6.3</i>] and [<i>The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 6.2</i>] – The foundation is made up of an impermeable/seepage-proof layer with a thickness as follows: – If made of clay, at least 1 meter; – If made of HDPE, at least 2 millimeters (2mm); – Has leak and spill collection, venting pipes and exhaust emissions control devices in place; – Floor areas that are used to store liquid and semi-solid hazardous wastes are corrosive-resistant and do not have cracks; – Storage areas for incompatible hazardous wastes have partitions to keep the wastes apart; – Fire prevention installations are in place and personnel are on duty 24 hours a day at toxic, flammable and explosive hazardous wastes storage areas; – Have safety lighting facilities and an observation window; and – Back-up ventilation system and closed-circuit monitoring devices are in place? V. Hazardous Waste Storage Areas Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.39 Does the facility ensure that warehouse-type hazardous waste storage areas comply with the following requirements: [<i>Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 6.2</i>] – Have a durable floor and skirting, are seepage-proof and the materials are compatible with the hazardous wastes; – Have leachate collection, vent pipes and exhaust emissions control devices; – Have safety lighting facilities and an observation window; – Have corrosive resistant and crack-free floor areas for liquid, semi-solid hazardous wastes storage; and – Have secondary containment equal to the capacity of at least one fifth of the aggregate volume, or the volume of the largest container? V. Hazardous Waste Storage Areas Comments:			
Q4.40 Does the facility ensure that management for hazardous waste storage operations complies with the following requirements: [<i>Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 7</i>] – Storage of wastes is appropriate to the physical and chemical property analysis report; – Hazardous wastes that are received are verified and recorded; and <RECORD KEEPING> – A passageway is provided in between every waste pile? See protocol for notes. V. Hazardous Waste Storage Areas Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.41 Are all hazardous waste containers and all facilities/sites for the collection, storage, transport, and disposal of hazardous wastes appropriately labeled according to the <i>Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Appendix A and B</i>? [Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Articles 52] and [Standard for Pollution Control on Hazardous Waste Storage - GB 18597-2001, Section 4.9] See protocol for notes. V. Hazardous Waste Storage Areas Comments:			
Q4.42 Does the facility ensure that emissions from vent pipes in hazardous waste storage areas comply with the standards of <i>Integrated Emission Standard for Air Pollutants - GB 16297-1996</i> and <i>GB 14554</i> (see Appendix 3-D and Section 3.0 of this protocol)? [Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 7.9] V. Hazardous Waste Storage Areas Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.43 Does the facility ensure that hazardous waste storage areas are equipped with the following items: [<i>Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 8.1.3</i>] – Communication facilities; – Lighting facilities; – Safety protective clothing and equipment; and – Emergency response equipment? V. Hazardous Waste Storage Areas Comments:			
Q4.44 Does the facility ensure that warning signs have been put up at hazardous waste storage facilities? [<i>Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 8.1.1</i>] See protocol for notes. V. Hazardous Waste Storage Areas Comments:			
Q4.45 If the facility stores industrial waste in piles outside the plant, in addition to the storage area requirements mentioned in the Question 4.43, have measures been implemented to prevent the following: [<i>Provisions on Environmental Protection Design of Construction Projects, Articles 41 and 51</i>] – Rainfall from leaching pollutants out of the piles; – Generation of dust; and – Self-combustion? V. Hazardous Waste Storage Areas Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.46 If the facility plans to close down a hazardous waste storage area, does it comply with the following: [<i>Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 9</i>] – Submits a closure proposal to the relevant authority for approval; and – Sends any contaminated installation, soil or wall materials that could not be cleaned/ decontaminated to a landfill for disposal? V. Hazardous Waste Storage Areas Comments:			
Q4.47 Does the facility ensure that the following requirements pertaining to hazardous waste containers and storage facilities are met: [<i>Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 7.8 & 7.9</i>] – All hazardous waste containers and storage facilities are examined periodically to ensure their functionality; and See protocol for notes. – The discharge from spills, washing, or leaking liquids in the hazardous waste storage area complies with the <i>Integrated Wastewater Discharge Standard - GB 8978-1996</i>, found in Appendix 5-C in Section 5.0 of this protocol? V. Hazardous Waste Storage Areas Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.48 Does the facility ensure that its hazardous waste records contain the following information: [<i>Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 7.7</i>] <RECORD KEEPING> – Name of the hazardous waste; – Source of the hazardous waste; – Quantity of the hazardous waste; – Special characteristics of the hazardous waste; – Type of container packaging; – Date the waste is received for storage; – Storage location; – Date the waste is taken out of storage; and – Name of the party receiving the waste? V. Hazardous Waste Storage Areas Comments:			
Q4.49 Are copies of hazardous waste records and storage manifest kept for at least 3 years? [<i>Standard for Pollution Control on Hazardous Waste Storage - GB18597-2001, Section 7.7</i>] <RECORD KEEPING> V. Hazardous Waste Storage Areas Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.50 If the facility produces hazardous waste, does it conduct the following activities: [<i>Measures on the Management of Hazardous Waste Manifests, Article 4</i>] – Submits a transfer proposal to the local environmental protection administration; – Obtains approval from the local environmental protection administration prior to transferring hazardous waste; – When approval has been obtained, applies for hazardous waste manifest forms from the competent department of environmental protection administration at the locality from which the hazardous wastes are to be transferred; and – Within three days prior to the transfer of hazardous waste, conducts the following activities: – Reports to the competent department of environmental protection administration in charge of the locality from which the hazardous waste is to be transferred; and – Reports the expected date and time of arrival of the hazardous waste to the competent department of environmental protection administration in charge of the locality where the hazardous waste will be received? VI. Hazardous Waste Manifests Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.51 If the facility transfers hazardous waste, does it ensure that copies of the manifest forms mentioned in Question 4.50 are completed each time as follows: [<i>Measures on the Management of Hazardous Waste Manifests, Article 5</i>] – If the same kind of hazardous waste is transferred in vehicles or vessels, forms are completed for each vehicle or each vessel; and – If different kinds of hazardous waste are transferred in each vehicle or vessel, forms are completed for each kind of waste? VI. Hazardous Waste Manifests Comments:			
Q4.52 Does the facility handle the manifest forms as follows: [<i>Measures on the Management of Hazardous Waste Manifests, Article 6</i>] – Accurately completes all columns in the forms and stamps its official seal on the form; – Keeps a record of the duplicate of the first page of the forms after verification, acceptance and signature by the transporter; <RECORD KEEPING> – Submits the second page of the forms to the competent department of environmental protection administration at the locality from where the hazardous waste is transferred; and – Submits the first page of the forms, together with the rest of the pages, to the transporter? VI. Hazardous Waste Manifests Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.53 When the facility receives the manifest forms from the hazardous waste recipient, does it do the following: [<i>Measures on the Management of Hazardous Waste Manifests, Article 8</i>] - Keeps a record of the first page of the manifest form; and <RECORD KEEPING> - Submits the second page of the manifest forms to the competent department of environmental protection administration at the locality from where the hazardous waste is transferred, within two days? See protocol for notes. VI. Hazardous Waste Manifests Comments:			
Q4.54 Does the facility keep manifest forms for transportation of hazardous waste for five years? [<i>Measures on the Management of Hazardous Waste Manifests, Article 10</i>] <RECORD KEEPING> See protocol for notes. VI. Hazardous Waste Manifests Comments:			
Q4.55 If the facility has an incinerator, does it ensure that the incinerator is not constructed at the following locations: [<i>Standard for Pollution Control on Hazardous Wastes Incineration – GB 18484-2001, Section 4.1</i>] - Areas stipulated under the <i>GB 3838-2002 (Environmental Quality Standard for Surface Water)</i> as Category I or Category II functional zones; See protocol for notes. - Areas stipulated under <i>Ambient Air Quality Standards - GB 3095-1996</i> as a Level I region; See protocol for notes.			

		Not Applicable	Complies	Does Not Comply
– Densely populated residential areas, commercial areas, or cultural areas; – Upwind of residential areas; or – Areas that are affected by floods, tides, or are prone to saturation? VII. Hazardous Waste Incineration Comments:				
Q4.56	Does the facility ensure that explosive and radioactive hazardous wastes are not incinerated? [<i>Standard for Pollution Control on Hazardous Wastes Incineration – GB 18484-2001, Section 4.2</i>] VII. Hazardous Waste Incineration Comments:			
Q4.57	If the facility has constructed a new centralized hazardous waste incinerator and there are buildings within a radius of 200 meters, does the facility ensure that the chimney height is at least 5 meters above the highest building? [<i>Standard for Pollution Control on Hazardous Wastes Incineration – GB 18484-2001, Section 4.3.2</i>] See protocol for notes. VII. Hazardous Waste Incineration Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.58 Does the facility ensure that a hazardous waste incinerator is installed with the following equipment: [<i>Standard for Pollution Control on Hazardous Wastes Incineration – GB 18484-2001, Section 4.4.4</i>] and [<i>The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 7.2.3</i>] – Tail gas purification system; – Alarm system; and – Emergency handling devices? See protocol for notes. VII. Hazardous Waste Incineration Comments:			
Q4.59 Does the facility ensure that hazardous waste storage areas at incineration facilities meet the following requirements: [<i>Standard for Pollution Control on Hazardous Wastes Incineration – GB 18484-2001, Section 4.5</i>] – Signs at the hazardous waste storage areas comply with <i>Graphical Signs for Environmental Protection - Solid Waste Storage (Disposal) Site - GB 15562.2-1995</i>, see Appendix 4-C; – Storage containers are labeled, and are corrosive-resistant, pressure-resistant, sealed, and non-reactive with the waste; – Incompatible hazardous wastes are stored separately; – Storage areas are equipped with water collection and discharge facilities, and seepage-proof facilities; and – The distance between the storage area and the incinerator complies with the fire prevention requirements? See protocol for notes. VII. Hazardous Waste Incineration Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.60 If the facility has an incinerator, does it ensure that the incineration of hazardous waste complies with the following requirements: [<i>The Technological Policies for Prevention and Control of Hazardous Waste Pollution, Section 7.2</i>] – Temperature of the incinerator reaches 1,100 degrees Celsius and above; and – Residues or ashes generated during the incineration process are disposed of at a secure hazardous waste landfill? VII. Hazardous Waste Incineration Comments:			
Q4.61 If the facility has plans to establish a landfill, does it meet the following requirements: [<i>Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001, Section 4</i>] – The selection complies with national and local urban and rural construction overall planning requirements; – The landfill is located in an area that is stabilized and free from damage by natural or man-made factors; – An Environmental Impact Assessment is conducted and approved by the competent administration department of Environmental Protection prior to construction; – The location is not in an urban development planning zone for industries and agriculture, agricultural protection area, natural conservation area, scenic area, relic protection area, drinking water resource protection area, water supply reserve area, minerals resources reserve area, etc; – The landfill site meets the following criteria: – Located more than 3000 meters away from an airport or military base; – Located more than 800 meters away from residential areas; – Site above the water level of a 100-year flood event; and			

	Not Applicable	Complies	Does Not Comply
– Site at least 150 meters away from a surface water body; – The geology of the landfill site fulfills the following criteria: – Foundation layer requirements (see Question 4.64); – Has sufficient clay sources on site or in nearby locations for the construction of the impermeable/ seepage-proof layer; – Does not coincide with areas of groundwater sources for drinking purpose; – Water supply wells are not located down gradient; – The groundwater level is 3 meters below the impermeable layer; – The natural rock stratum is relatively even, with low permeability; and – Geological structures are relatively simple and stable, without the presence of geological faults; and – The site has sufficient acreage to accommodate expansion over a 10-year lifespan? VIII. Hazardous Waste Landfills Comments:			
Q4.62 Does the facility ensure that wastes that are sent to the landfill site meet the following entry/ acceptance requirements: [<i>Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001, Section 5</i>] – Wastes to be landfilled directly comply with the following: – The harmful substances in the waste's free liquids have exceeded the limits in <i>Standard Hazardous Waste Characteristic Classification for Extraction Procedure Toxicity - GB 5085.3-2007</i>, and – The pH of the waste's free liquids is within the range of 7.0 -12.0; and			

	Not Applicable	Complies	Does Not Comply
– The following wastes are pretreated prior to landfilling: – Wastes with concentrations of harmful substances in the free liquids that exceed the limits in Table 4-4; – Wastes whose free liquids have a pH of less than 7.0 or more than 12.0; – Reactive and flammable waste; – Waste with a moisture content more than 85%; and – Waste in liquid form? See protocol for notes. VIII. Hazardous Waste Landfills Comments:			
Q4.63 Does the facility ensure that the wastes listed below are not landfilled: [<i>Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB18598-2001, Section 5.3</i>] – Medical wastes; and – Waste that is incompatible with the landfill liner? VIII. Hazardous Waste Landfills Comments:			
Q4.64 Does the facility ensure that the design of a hazardous waste landfill site fulfills the following requirements: [<i>Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001, Section 6</i>] – A pretreatment station is constructed to include installations for temporary aggregation, segregation and crushing, volume and quantity reduction, stabilization, and maintenance of the wastes;			

	Not Applicable	Complies	Does Not Comply
– Incompatible wastes are placed in different zones/cells of the landfill; See protocol for notes. – Materials used for the construction of landfill sites are compatible with all the potential waste with which they may come into contact, and are corrosive-resistant; – The saturation and permeability coefficient of the natural foundation layer is less than 1.0×10^{-7} centimeter per second, and the thickness of the layer is more than 2 meters; – The types of liner material used (natural liner, composite liner or double artificial liner) are based on the geology of the natural foundation layer; – A leachate collection system, rainwater collection and discharge system, and exhaust emission system are installed; – If a natural liner or composite liner is used, a centralized leachate collection and discharge system is installed; See protocol for notes. – If a double artificial liner is used, an auxiliary collection and discharge system is installed in addition to the centralized leachate collection system; See protocol for notes. – Permeability of the water discharge layer is more than 0.1 centimeter per second; – Periphery of the landfill site is fenced with vegetation to a width of at least 10 meters; and – The assurance of site quality is approved by the competent department of environmental protection prior to construction? VIII. Hazardous Waste Landfills Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.65 Does the facility ensure that the management of landfill site operations complies with the following requirements: [<i>Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001, Section 7</i>] – Hazardous wastes acceptance requirements are in place; – Wastes are compacted and the thickness of the layer is determined by the volumes and the site conditions; – The landfill is covered every day; – Exits and entrances of the landfill site are unobstructed at all seasons of the year; – The slope ratio of the waste pile in the landfill is 1:3 (vertical: horizontal); – Signs complying with Standard <i>GB 15562.2-1995</i> in Appendix 4-C are posted; – A record of the landfill site operation for every working day is kept that includes parameters of facility technical control, sources of wastes, types of wastes, location in the landfill, and environmental monitoring data; <RECORD KEEPING> – Wastes are protected from rain before they have been covered in the landfill; and – Operation management personnel are well trained prior to commencing work? VIII. Hazardous Waste Landfills Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.66 Does the facility ensure that pollution control at the landfill site complies with the following requirements: [<i>Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001, Section 8</i>] – Leachate is collected, treated, and meets the requirements for Category I pollutant maximum permissible discharge concentrations and the standard of Category II pollutant maximum permissible discharge concentrations specified in the <i>Integrated Wastewater Discharge Standard - GB 8978-1996</i> (see Appendix 5-C in Section 5.0 of this protocol) prior to discharge; – Groundwater pollution assessment methods and limits comply with <i>Quality Standard for Groundwater - GB/T 14848-93</i>; – Gas emissions comply with <i>Integrated Emission Standard for Air Pollutants - GB 16297-1996</i> (see Table 2 in Appendix 3-D in Section 3.0 of this protocol); and – Noise levels comply with <i>GB 12348</i> (see Table 7-1 in Section 7.0 of this protocol)? VIII. Hazardous Waste Landfills Comments:			
Q4.67 If the facility is capping the landfill site, does it ensure that the top cover of the site meets the following requirements: [<i>Standard for Pollution Control on Secure Landfill Sites for Hazardous Wastes - GB 18598-2001, Section 9</i>] – Consists of several layers; – The bottom layer has a thickness of more than 20 centimeters, and a slope of more than 2 percent; – The seepage-proof layer is as follows: – If made of natural material: The seepage-proof layer is more than 50 centimeters thick, with a permeability coefficient of less than 10^{-7} centimeter per second; OR – If composite seepage-proof layer is used, the artificial material layer is more than 1.0 millimeter thick and the thickness of the natural material layer is more than 30 centimeters;			

	Not Applicable	Complies	Does Not Comply
– The water discharge layer and water discharge piping system are able to accommodate the magnitude of a 50-year rain event; – The protection layer has a thickness of more than 20 centimeters, and consists of coarse cobbles; and – The re-vegetation layer has a thickness of more than 60 centimeters, with a slope of not more than 33 percent? See protocol for notes. VIII. Hazardous Waste Landfills Comments:			
Q4.68 If the facility generates medical wastes, are the following plans in place: <i>[Regulations on the Management of Medical Waste, Section 8]</i> – Safe storage rules for medical wastes; and – Emergency response plan? See protocol for notes. IX. Medical Waste Management Comments:			
Q4.69 If the facility generates medical wastes, does it ensure that the following occupational hygiene measures are provided to employees who are responsible for the collection, transport, storage and disposal of these wastes: <i>[Regulations on the Management of Medical Waste, Section 10]</i> – Personal protective equipment; – Periodic medical check-ups; and – Vaccinations, if necessary? See protocol for notes. IX. Medical Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.70 If the facility generates medical wastes, does it keep a medical waste record that includes the following information: [<i>Regulations on the Management of Medical Waste, Section 12</i>] and [<i>Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 24</i>] <RECORD KEEPING> – Source of generation; – Types of waste; – Weight or quantity; – Time of transfer; – Method of disposal; – Final destination; and – Signature of the responsible employee? IX. Medical Waste Management Comments:			
Q4.71 Are medical waste records kept for at least 3 years? [<i>Regulations on the Management of Medical Waste, Section 12</i>] <RECORD KEEPING> IX. Medical Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.72 If an incident occurs where medical wastes leak and/or are dispersed, does the facility ensure that the following parties are notified: <i>[Regulations on the Management of Medical Waste, Section 13]</i> and <i>[Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 7]</i> – The health and environmental protection department at the provincial level, within 48 hours; and – Any potential institution or individual that may be affected (no timing is specified)? IX. Medical Waste Management Comments:			
Q4.73 If medical wastes have leaked/spilled, or been dispersed, does the facility conduct an investigation of the incident and submit the investigation report to the health and environmental protection department at the provincial level? <i>[Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 7]</i> IX. Medical Waste Management Comments:			
Q4.74 If the facility generates medical wastes, does it comply with the following storage requirements: <i>[Regulations on the Management of Medical Waste, Section 14]</i> and <i>[Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 26]</i> – Medical wastes are not dumped and/or stored outside the designated medical wastes storage area; and – Medical wastes are not mixed with other wastes and/or domestic wastes? IX. Medical Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.75 If the facility generates medical wastes, does it ensure that such wastes are not disposed of during waste transfers? [<i>Regulations on the Management of Medical Waste, Section 14</i>] IX. Medical Waste Management Comments:			
Q4.76 If the facility generates medical wastes, does it ensure that they are transferred to a temporary storage area on a designated schedule and by a designated route? [<i>Regulations on the Management of Medical Waste, Section 18</i>] and [<i>Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 16</i>] IX. Medical Waste Management Comments:			
Q4.77 If the facility generates medical wastes, does it ensure that waste transfer equipment meets the following criteria: [<i>Regulations on the Management of Medical Waste, Section 18</i>] and [<i>Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 19</i>] – Leak-resistant; – Able to contain such waste without allowing dispersal of the waste; – Free of sharp corners and edges; – Easily assembled and dismantled; and – Easily cleaned? IX. Medical Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.78 Does the facility ensure that equipment used for the transfer of waste to temporary storage areas is cleaned and sterilized immediately after use? <i>[Regulations on the Management of Medical Waste, Section 18]</i> and <i>[Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 19]</i> IX. Medical Waste Management Comments:			
Q4.79 If the facility generates medical wastes, does it comply with the following storage requirements: <i>[Regulations on the Management of Medical Waste, Section 17]</i> and <i>[Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 20]</i> – A temporary medical wastes storage area is in place; – Medical wastes are not stored in the open air; and – Medical wastes are not stored for more than two days in a temporary storage area? IX. Medical Waste Management Comments:			
Q4.80 Does the facility ensure that temporary medical waste storage areas meet the following criteria: <i>[Regulations on the Management of Medical Waste, Section 17]</i> and <i>[Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 21]</i> – Are located away from medical treatment areas, food processing areas, activity areas, and domestic waste storage areas; – Enable easy access for medical waste transporters and transport equipment or vehicles; – Clearly visible/obvious medical waste caution signs and “No smoking, eating and drinking” signs are posted;			

	Not Applicable	Complies	Does Not Comply
– Effective measures are in place to prevent: – Infiltration by pests (mice, insects, cockroaches); – Theft; and – Access by children; – Easily allow regular cleaning and sterilizing operations; – Are out of direct sunlight; and – Have strict security measures in place to prevent unauthorized personnel from having contact with the waste? IX. Medical Waste Management Comments:			
Q4.81 If the facility generates medical wastes and is located in an area without a centralized medical waste collection facility, does it manage such waste in accordance to the following principles: <i>[Regulations on the Management of Medical Waste, Section 21]</i> and <i>[Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 27]</i> – Disposable medical equipment and waste that can easily cause injury is sterilized, bent/misshapen (to make further use impossible), and disposed of; – Wastes that can be burned are burnt immediately; and – Wastes that cannot be burned are sterilized and landfilled? See protocol for notes. IX. Medical Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.82 If the facility generates medical wastes, does it ensure that such wastes are classified according to the <i>Catalogue on Medical Wastes Classification</i> in Table 4-5? [<i>Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 10</i>] and [<i>Regulations on the Management of Medical Waste, Section 16</i>] IX. Medical Waste Management Comments:			
Q4.83 Does the facility ensure that classified medical wastes are stored in packages or containers that comply with the following criteria: [<i>Regulations on the Management of Medical Waste, Section 16</i>] and [<i>Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 11(1)</i>] – Are leak and cut resistant; – Are hermetically sealed; and – Comply with the construction standards of the <i>Standard for Medical Waste Packages, Containers and Warning Labels - HJ 421-2008</i>? IX. Medical Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.84 Does the facility ensure that all medical waste packages and containers have the following labels: [<i>Regulations on the Management of Medical Waste, Section 16</i>] and [<i>Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 15</i>] – A “Medical Waste” warning label as in Appendix 4-E; and – A label written in the Chinese language with the following information: – Source of generation; – Date of generation; – Type of waste; and – Any special/additional indications? See protocol for notes. IX. Medical Waste Management Comments:			
Q4.85 Does the facility ensure that all medical waste packages and containers are sealed tightly once they reach 75% of their storage capacity? [<i>Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 13</i>] IX. Medical Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.86 Does the facility ensure that medical wastes in the temporary storage area are transferred to a centralized medical waste collection facility approved by the people's government at the provincial level? [<i>Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 23</i>] IX. Medical Waste Management Comments:			
Q4.87 Does the facility ensure that the manifest for the transfer of hazardous waste is completed prior to transfer to an approved centralized medical waste collection facility? [<i>Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 23</i>] See protocol for notes. IX. Medical Waste Management Comments:			
Q4.88 Does the facility ensure that temporary storage areas and facilities for medical wastes are immediately cleaned and sterilized after the medical wastes have been transferred out? [<i>Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Section 25</i>] IX. Medical Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.89 If the facility generates medical wastes, does it provide information and training to its employees who are involved in the collection, transport, storage and disposal of this waste, and does it ensure the following topics are covered: [<i>Regulations on the Management of Medical Waste, Article 9</i>] and [<i>Provisions on the Management of Medical Wastes from Medical Treatment Organizations, Article 9 & Article 29</i>] – Relevant regulations and skills; – Safety and protective measures; and – Emergency response? IX. Medical Waste Management Comments:			
Q4.90 Does the facility classify radioactive wastes during collection and handling based on the following characteristics: [<i>Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources - GB 18871-2002, Sections 8.5.2 & 8.5.3</i>] and [<i>Measures on Management of Urban Radioactive Waste, Article 14</i>] – Type of radionuclides; – Radionuclide content in the waste; – Half-life of the radionuclides; – Concentration of radionuclides; – Volume of the wastes; and – Difference in the physical and chemical characteristics of the wastes, such as combustibility? See protocol for notes. X. Radioactive Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.91 If the facility discharges radioactive substances to the environment, does it comply with the following requirements: [<i>Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources - GB 18871-2002, Sections 8.6.1</i>] and [<i>Law of the People's Republic of China on the Prevention and Control of Radioactive Pollution, Article 42</i>] – The discharge is approved by the local regulatory authority; – The total discharge quantity and discharge concentration are within the limits specified by the local regulatory authority; See protocol for notes. – Monitoring and control devices measure discharge flow rate and discharge concentrations to ensure a controlled discharge; – Radioactive liquid waste is discharged through a trough; and See protocol for notes. – Public exposure caused by the discharge meets the dosage limits indicated in the notes below? See protocol for notes. X. Radioactive Waste Management Comments:			
Q4.92 If the facility discharges radioactive materials in liquid or gaseous form to the environment, does it complete the following tasks: [<i>Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources - GB 18871-2002, Section 8.6.3</i>] – Identifies the material's characteristics and the radioactivity of the discharge; – Identifies possible discharge locations and sources; – Identifies via environmental investigations, pre-operational experiments or mathematical simulations, all major exposure routes that may cause public exposure due to discharged radionuclides; and			

	Not Applicable	Complies	Does Not Comply
– Estimates the potential critical group exposure dosages that may be caused by the discharges? See protocol for notes. X. Radioactive Waste Management Comments:			
Q4.93 Is a report on the results of the tasks listed in Question 4.92 submitted to the local regulatory authority? [<i>Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources - GB 18871-2002, Section 8.6.3</i>] X. Radioactive Waste Management Comments:			
Q4.94 Does the facility ensure that radioactive liquid waste is not discharged into any ordinary sewer unless the capacity of the sewer is 10 times the discharge flow, and the waste has been determined by the local regulatory authority to be low-level radioactive liquid waste that complies with the following requirements: [<i>Basic Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources - GB 18871-2002, Section 8.6.2</i>] – The total radioactivity per monthly discharge does not exceed $10AL_{min}$; – The activity of each discharge does not exceed $1AL_{min}$; and – Each discharge is flushed with a volume of water at least 3 times the volume of the discharge? See protocol for notes. X. Radioactive Waste Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.95 If the facility generates radioactive solid waste, does it comply with the following disposal requirements: [<i>Law of the People's Republic of China on the Prevention and Control of Radioactive Pollution, Article 43 & 45</i>] – Waste is not disposed of in inland or ocean waters; – Waste is appropriately treated prior to being sent for disposal; and – Waste is sent to disposal areas designated for radioactive solid waste? X. Radioactive Waste Management Comments:			
Q4.96 If the facility generates radioactive waste, does it ensure that the waste is sent to an urban radioactive waste management entity? [<i>Measures on Management of Urban Radioactive Waste, Article 12</i>] XI. Urban Radioactive Waste Comments:			
Q4.97 If the facility generates radioactive waste, does it register with the environmental protection department in the province, autonomous region, or municipality that is directly under the control of the central government level? [<i>Measures on Management of Urban Radioactive Waste, Article 13</i>] XI. Urban Radioactive Waste Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.98 Does the facility ensure that it complies with the following requirements pertaining to the collection of radioactive waste: [<i>Measures on Management of Urban Radioactive Waste, Article 14</i>] – Radioactive waste is not mixed with general waste; – Waste radioactive sources are stored separately from general radioactive waste; – Organic scintillation liquid containing radionuclides is stored in stainless steel or glass cylinders; and – Radioactive waste is stored in a designated area and the area is posted with an ionizing radiation warning sign? XI. Urban Radioactive Waste Comments:			
Q4.99 Does the facility ensure that the packaging of radioactive wastes complies with the following requirements: [<i>Measures on Management of Urban Radioactive Waste, Article 15</i>] – Specialized plastic bags for storage of radioactive waste are sealed and do not leak; – Radioactive waste with sharp or pointed ends is enclosed in a hard paper box or other packaging prior to be placed in a plastic bag; – The surface dose ratio of each waste package does not exceed 0.1mSv/h (10mrem/h); – The volume of each waste package does not exceed 30L; and – The weight of each waste package does not exceed 20kg? XI. Urban Radioactive Waste Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.100 Does the facility ensure that it complies with the following radioactive wastes storage requirements: [<i>Measures on Management of Urban Radioactive Waste, Article 16</i>] – The waste is dry and the amount of free liquid does not exceed 1% of the volume of the waste; – The waste is of a stable character, without any volatile, strong oxidizing agents, or explosive or corrosive matter; – Waste radioactive sources are stored in a container; – Sealed sources that are damaged are re-packed and appropriately relabeled; – Contamination of the external surface of the packing does not exceed the following: – 0.4 Bq/cm² for beta, gamma and low toxicity alpha emitters; and – 0.04 Bq/cm² for all other alpha emitters; and – Radioactive sources that are temporarily not being used are stored in a waste warehouse? XI. Urban Radioactive Waste Comments:			
Q4.101 If the facility is a shipyard, dockyard, or oil depot, has it installed equipment of an appropriate nature and scale to collect and handle oil residue and waste oil, industrial liquid waste, and ship refuse? [<i>Regulation on the Management Concerning the Prevention and Control of Marine Environmental Damage Caused by Pollution from Coastal Construction Projects, Articles 16 and 18</i>] See protocol for notes. XII. Other Industry-Specific Waste Management Requirements Comments:			

		Not Applicable	Complies	Does Not Comply
Q4.102	Does the facility prohibit the import of wastes listed in the <i>Catalogue of Solid Wastes Prohibited from Import</i> (Appendix 4-F)? [<i>Catalogue of Solid Wastes Prohibited from Import</i>] XIII. Requirements for the Import of Solid and Hazardous Wastes Comments:			
Q4.103	If the facility plans to import wastes that are listed under the <i>Catalogue of Solid Wastes Restricted from Import for Raw Materials</i> (Appendix 4-F), has it obtained approval from the environmental protection departments and foreign trade departments of the State Council? [<i>Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 25</i>] XIII. Requirements for the Import of Solid and Hazardous Wastes Comments:			
Q4.104	If the facility plans to import wastes that are listed in the <i>Catalogue of Solid Wastes that are Automatically Approved for Import for Use as Raw Materials</i> (Appendix 4-F), has it completed the auto-permitting procedures? [<i>Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes, Article 25</i>] See protocol for notes. XIII. Requirements for the Import of Solid and Hazardous Wastes Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.105 If the facility imports any waste, does it prohibit the import of any wastes that are <u>not</u> listed in Appendix 4-F? <i>[Interim Provisions on the Environmental Protection Management of Waste Imports, Article 8]</i> XIII. Requirements for the Import of Solid and Hazardous Wastes Comments:			
Q4.106 Does the facility submit a quarterly Reporting Form of Imported Wastes based on its waste importation status, to the local administrative department on environmental protection above the municipal level? <i>[Interim Provisions on the Environmental Protection Management of Waste Imports, Article 22]</i> XIII. Requirements for the Import of Solid and Hazardous Wastes Comments:			
Q4.107 If the facility uses imported wastes as raw materials in its production processes, does it comply with the requirements in its Environmental Risk Report and with any conditions further specified by the authorities? <i>[Interim Provisions on the Environmental Protection Management of Waste Imports, Articles 22 and 24]</i> XIII. Requirements for the Import of Solid and Hazardous Wastes Comments:			

		Not Applicable	Complies	Does Not Comply
Q4.108 Has the facility received an Approval Certificate on Importing Wastes from the State Environmental Protection Administration (SEPA) for the importation, operation, processing and utilization of any wastes listed in Appendix 4-F? [<i>Interim Provisions on the Environmental Protection Management of Waste Imports, Article 26</i>] See protocol for notes. XIII. Requirements for the Import of Solid and Hazardous Wastes Comments:				
Q4.109 Was a notification of import of wastes submitted to the commodity inspection authorities at least 10 days prior to arrival of waste at the port? [<i>Interim Provisions on the Environmental Protection Management of Waste Imports, Supplementary, Article 5</i>] See protocol for notes. XIII. Requirements for the Import of Solid and Hazardous Wastes Comments:				
Q4.110 Does the facility prohibit the export of hazardous wastes to any non-contracting parties to the <i>Basel Convention</i> ? [<i>Administrative Measures for Examination and Approval of the Export of Hazardous Wastes, Article 2</i>] XIV. Transboundary Movement of Hazardous Wastes Comments:				

	Not Applicable	Complies	Does Not Comply
Q4.111 If the facility generates, collects, stores, disposes of, or uses hazardous goods and it intends to export hazardous wastes to any contracting parties to the <i>Basel Convention</i> outside the People's Republic of China, does it obtain approval from the department of environmental protection under the State Council? [<i>Administrative Measures for Examination and Approval of the Export of Hazardous Wastes, Articles 3 and 4</i>] See protocol for notes. XIV. Transboundary Movement of Hazardous Wastes Comments:			
Q4.112 If the facility has received an Approval Notice for the export hazardous wastes, does it reapply for approval whenever any of the following circumstances occur: [<i>Administrative Measures for Examination and Approval of the Export of Hazardous Wastes, Article 10</i>] – A change or addition to the type or quantity of hazardous wastes to be exported; – A change of the exporter, disposer, or user in the State (region) of import; – A change of the State (region) of import or the State (region) of transit; – A change in the purpose of export; and/or – A change in the time frame of export? XIV. Transboundary Movement of Hazardous Wastes Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.113 Does the facility complete the “Manifest Forms-Transboundary Movement of Hazardous Wastes” in duplicate for each batch of hazardous wastes exported, and are the copies distributed as follows: [<i>Administrative Measures for Examination and Approval of the Export of Hazardous Wastes, Article 10</i>] <RECORD KEEPING> – One copy is submitted to the administrative department of environmental protection under the State Council; and – The duplicate copy is kept by the facility for at least five years, or longer if instructed to do so by the administrative department of environmental protection under the State Council? XIV. Transboundary Movement of Hazardous Wastes Comments:			
Q4.114 If the facility generates and disposes of electronic wastes, does it comply with the following: [<i>Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes, Articles 7, 11, 13 and 15</i>] – Electronic wastes are not disposed of directly in a landfill; and – The disposal contractor has been licensed and publicly listed by the local department on environmental protection at or above the county level, for the dismantling, utilization, and disposal of electronic waste? See protocol for notes. XV. Control of Electronic Waste Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.115 If the facility generates and disposes of electronic wastes, does it maintain records of the following information for at least 3 years: [<i>Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes, Article 16</i>] <RECORD KEEPING> – Type, weight, or quantity of the industrial electronic waste generated; and – Manner in which the electronic wastes were handled by the facility, or whether they were transferred to a third party for storage, dismantling, utilization, and/or disposal? XV. Control of Electronic Waste Comments:			
Q4.116 Does the facility report relevant information about the type, output, whereabouts, dismantling, utilization, storage, and disposal of electronic waste to the environmental protection administrative department under the local people's government at or above the county level? [<i>Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes, Article 16</i>] See protocol for notes. XV. Control of Electronic Waste Comments:			

	Not Applicable	Complies	Does Not Comply
Q4.117 If the facility produces or imports electronic and electrical products or equipment, has it established a recovery system to recover the discarded products or equipment, and does the system ensure that electronic wastes are stored, utilized or disposed of in an environmentally sound manner? <i>[Management Measures on Environmental Pollution Prevention and Control of Electronic Wastes, Article 14]</i> See protocol for notes. XV. Control of Electronic Waste Comments:			

5.0 WATER RESOURCES

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

- I. Water Use Permitting 5-5
- II. Surface Waters 5-6
- III. Groundwater 5-7
- IV. Waste Water 5-8
- V. Facilities Handling Substances Hazardous to Water 5-9
- VI. Water Protection Officer 5-13

Tables or Appendices referenced in the protocol are located at the end of this section, along with a link to our audit scorecard, entitled [Audit Quick Check](#). This protocol applies to facilities located throughout Germany.

A. KEY LEGISLATION AND REGULATIONS

Key legislation and regulations covered in this protocol are noted as follows:

National:

- **Groundwater Ordinance (Grundwasserverordnung - GrundwV)**, 18 March 1997. This is the Ordinance for the protection of groundwater from certain hazardous substances. It regulates use of such hazardous substances and sets investigation and monitoring duties.
- **Administrative Order for the Classification of Substances Hazardous to Water into Water Hazard Classes (Verwaltungsvorschrift wassergefährdende Stoffe - VwVwS)**, 17 May 1999 as amended through 27 July 2005. This Order determines substances that impact water bodies by changing their physical, chemical or biological characteristics.

Depending on the relative degree of danger posed, the substances are classified into three water hazard classes.

- **Water Act (Wasserhaushaltsgesetz - WHG), 19 August 2002 as amended through 31 July 2009.** This is the federal *Water Act*, which aims at managing bodies of water so that adverse effects are avoided. This Act covers permitting and licensing requirements. The Act is also applicable to installations storing substances which are a potential hazard to water; however further details are provided in the different federal state water acts.
- **Waste Water Ordinance (Abwasserverordnung - AbwV), 15 October 2002 as amended through 31 July 2009.** This Ordinance establishes the minimum requirements for the issuance of a water discharge permit, according to different types of waste water producing processes. Discharge levels are established for contaminants, which would be expected in discharge water from specific industrial activities.

European Union:

None.

The consolidated and current text of German legislation can be accessed at: <http://www.gesetze-im-internet.de> (last accessed in March 2010), a publicly available, free service of the Federal Justice Ministry (*Bundesministerium der Justiz*). Select “Gesetze / Verordnungen” for an alphabetical listing of legislation, or choose “Titelsuche” and enter the title or a portion of it. “Volltextsuche” provides a free text search of both the title and contents. Note that requirements enacted but not yet in force are not incorporated into the text.

European Union legislation can be obtained by performing a “Natural Search” at: http://eur-lex.europa.eu/RECH_naturel.do (last accessed in January 2010). Specific legislation is found by selecting the legislation type (i.e., Regulation, Directive or Decision) and entering the 4-digit year in the “Enter the Year” field (usually indicated as the first number before the “/” in the titles of Directives and Decisions and the second number after the “/” in the titles for Regulations) and the document number in the “Enter Document Number” field (the document number may be found in the title as the number that is separated from the year by a “/”). It should be noted that prior to the year 2000 many documents used a 2-digit year format in the document title. Once the document has been located, individual amendments to, as well as consolidated versions of, the legislation can be viewed by selecting the “Bibliographic Notice.”

This protocol section updates information contained in the prior version (2008). Specific additions, deletions, and other changes made relative to the earlier version of the protocol are summarized in Appendix 5-A.

B. TOPICS AND QUESTIONS

Notes: The *Water Act* ([WHG](#)) applies to surface waters, coastal waters and groundwater. “Surface water” is defined as water which permanently or temporarily stands or flows in beds or which flows from natural springs. “Coastal waters” is defined as the sea between the coast line at medium tide and the seaward limitation of the coastal sea. “Groundwater” is defined as underground water in the saturated zone that is in constant contact with the soil or subsurface. [\[§1\(1\) WHG\]](#)

The [WHG](#) provides a framework for the management of water that is complemented by the *State Water Acts* (*Landeswassergesetze*). German states have the authority to exclude from the jurisdiction of the [WHG](#) small water bodies that are of minor economic importance and mineral springs that are used for therapeutic (health) purposes. [\[§1 WHG\]](#)

The ownership of land that contains regulated waters does not entitle the landowner to utilize such water without a permit or license. Waters may only be used with a permit (*Erlaubnis*) or license (*Bewilligung*). The permit confers authority to use the water for specific purposes and time periods and can be withdrawn by the authorities. Normally, the permit is transferable to a successor landowner or operator unless the permit specifically prohibits such transfer. [\[§4, §7, §8 WHG\]](#) The permitting of water use does not confer title to the water supply. [\[§2 WHG\]](#) Permits are subject to changes that may be imposed by the responsible authorities, which are typically the state water authorities. [\[§5 WHG\]](#)

If the regulated waters are under an approved regional water conservation plan, then the permit is secured through the planning authorities. If the waters are under a mining operation plan then the permit is secured through the mining authority.

The [WHG](#) imposes requirements on the discharge of waste water into the public sewage system through the *Ordinance on Requirements for the Discharge of Waste Water into Water Bodies* (*Abwasserverordnung*) ([AbwV](#)). The ordinance requires effluents from a list of industrial sources to meet the discharge limits for hazardous substances or be treated to meet these effluent limits. The wastewater treatment requires permitting. The facility must observe the requirements of this permit, which derive from the [AbwV](#) or a municipal drainage statute (*Kommunale Entwässerungssatzung*).

Water protection areas can be defined by state water authorities to protect the public water supply or the groundwater. Use of land and activities are limited in a water protection area, which is divided into three zones:

- Zone I: Protected area around a drinking water extraction installation; no industrial, commercial, farming or private uses are allowed;

- Zone II: Closely protected zone to protect groundwater against pathogenic microorganisms or other negative impacts. In this zone, no industrial or commercial companies that could negatively impact the groundwater are allowed to operate. Farming is allowed on a limited basis; and
- Zone III: Broader protection zone to protect groundwater, especially against chemical pollutants that do not degrade easily. Sometimes, this zone can be divided into an internal zone (III A) and an outside zone (III B). Facilities handling substances that are hazardous to water that do not easily degrade generally do not receive an operating license (e.g. refineries, smelters, chemical plants, thermal power stations, landfills, scrap yards, mining and gas stations).

The size of the different zones depends on the hydrological and hydrogeological situation and can differ by location. Each company should ask the competent water authority for information about water protection areas and allowed activities. Additionally, there are medicinal spring protection areas that impose stringent restrictions.

The [WHG](#) sets out the main requirements for handling substances hazardous to water to protect water bodies against harmful impacts. Detailed requirements on handling substances hazardous to water are regulated by the individual states through *Ordinances on Installations Handling Substances Hazardous to Water (Anlagenverordnung)*. Tank-related aspects of the State ordinances are covered in Section 6.0 of this protocol.

Substances constituting a water hazard are defined under the [WHG](#) as solid, liquid and gaseous substances which are likely to cause lasting, adverse effects on the physical, chemical or biological composition of the water and include: [§19g\(5\) WHG](#):

- Acids, lyes;
- Alkali metals, silicon alloys containing more than 30% silicon, metal-organic compounds, halogens, acid halogenides, metal carbonyls and caustic salts;
- Mineral and tar oils, as well as their products;
- Liquid as well as water-soluble hydrocarbons, alcohols, aldehydes, ketones, esters, as well as those organic compounds which contain halogens, nitrogen and sulfur; and
- Toxins.

These substances are ranked in the *Administrative Order regarding the Classification of Substances Hazardous to Water into Water Hazard Classes* ([VwVwS](#)). A complete list of regulated substances hazardous to water can be downloaded from <http://www.umweltbundesamt.de/wgs-e/wgs-down.htm> (last accessed in February 2010). Substances are divided into three categories (water hazard classes - WGK): WGK 3 - very hazardous to water; WGK 2 - hazardous to water; and WGK 1 - mildly hazardous to water. [[VwVwS](#)]

Amendments to the [VwVwS](#) have developed a stronger connection to the European Union's hazardous substances directives (*Directive 67/548/EEC* and *Directive 1999/45/EC*), in the process of being replaced by the *REACH* regulation. Facilities may now define their substances hazardous to water by using Risk Phrases as listed in *Directive 67/548/EEC* and *Directive 1999/45/EC*. See the link to European Union legislation at the beginning of this protocol section for access to the text and annexes of these Directives.

For links to information about, and the text of the [VwVwS](#), see: <http://www.umweltbundesamt.de/wgs/vwwws.htm> (last accessed in March 2010).

A new version of the *Water Resources Act* ([WHG](#)) comes into force as of 1 March 2010. The main changes to the existing Act include a federal harmonization of water use permitting procedures and a re-organization of requirements related to the handling of substances hazardous to water to future Articles §62 and §63. It is also expected that individual state ordinances currently regulating details for the handling of substances hazardous to water (VAwS) will be replaced by a new federal ordinance (working title: *VUmwS*) sometime in 2010.

I. Water Use Permitting

5.1 If the facility uses surface waters, coastal waters or groundwater (regulated waters), does it hold a current permit for their use? [[§7, §8 WHG](#)]

Notes: "Use" is defined as any of the following: [[§3 WHG](#)]

- The withdrawal or diversion of water from surface waters;
- The damming or lowering of surface waters;
- The withdrawal of solid substances (such as dredging) from surface waters, so far as this has any effect on the condition of such waters or their flow;
- The introduction or discharge of substances into surface waters;
- The introduction and discharge of substances into coastal waters;

- The discharge of substances into groundwater;
- The removal (pumping or withdrawal) or draining of groundwater;
- The damming, lowering or diversion of groundwater; or
- Any activity which may permanently lead to a relevant negative alteration of physical, chemical or biological properties of water.

5.2 If the facility holds a current water use permit, does it meet applicable permit conditions? [\[§7, §8 WHG\]](#)

5.3 If the facility uses regulated waters and has had its permit approved but does not currently have possession of that permit, does it have a preliminary order issued by the authorities allowing for such use? [\[§9a WHG\]](#)

5.4 If the facility has used regulated waters since 12 August 1957, but does not have a permit to do so, does the facility have “old rights and authority” to use the regulated water? [\[§15 WHG\]](#)

Notes: An “old right” involves the long-term use of a water body that is known in the municipality, such as water for a mill or for fish ponds, or that was allowed by former regulations.

5.5 Are the above-mentioned “old rights and authorities” documented in the official water book? [\[§16 WHG\]](#)

Notes: The state water authorities have the official water book for a region or the state. The holder of an old water right which is not documented in the water book can be called upon by official announcement to enter this right into the water book within three years after the announcement. Rights that have not been entered cease 10 years after the announcement. [\[§16\(2\) WHG\]](#)

II. Surface Waters

5.6 Does the facility ensure that it does not dispose of any solid substances into surface waters? [\[§26\(1\) WHG\]](#)

Notes: Disposal of solid substances into the water is prohibited. Mud is not defined as a solid substance. [\[§26\(1\) WHG\]](#)

- 5.7** If the facility stores hazardous substances near surface waters, is storage done in a manner such that the water is not polluted or the quality adversely affected? [[§26\(2\), §32b\(2\) WHG](#)]
- 5.8** If the facility stores or conveys liquid or gaseous substances through pipes that are located near surface waters, is storage and/or conveyance done in a manner such that the water is not adversely affected? [[§26\(2\), §32b\(2\) WHG](#)]

III. Groundwater

- 5.9** If the facility stores substances that can migrate to the groundwater, are storage practices such that the groundwater will not be polluted or its quality adversely affected? [[§34\(2\) WHG](#)]
- 5.10** If the facility transports substances in pipelines (above ground or under ground), is the construction and operation of the pipeline system such that the groundwater will not be polluted or its quality adversely affected? [[§34\(2\) WHG](#)]
- 5.11** If the facility uses groundwater, does the facility fulfill the following: [[§3, §4 GrundwV](#)]
- No direct discharge of substances in List I (see Table [5-1](#)) into the groundwater unless the materials are needed for the production of potable water;
 - No disposal, storage, or deposit of substances in List I (Table [5-1](#)), which can reach the groundwater unless a permit for such activities has been obtained; and
 - No direct discharge, disposal, storage, or deposit of substances found in List II (see Table [5-1](#)) into the groundwater unless a permit for such activities has been obtained?

Notes: When the discharge of a material involves such small quantities or concentrations of any listed substances that all danger of contaminating the receiving groundwater now and in the future is excluded, the aforementioned prohibitions do not apply. [[§3\(3\) GrundwV](#)]

A permit for the discharge, disposal, storage, or deposit of a substance in List I or II must be reviewed every 4 years by the authorities. [[§6\(3\) GrundwV](#)]

IV. Waste Water

Notes: While the [WHG](#) and the [AbwV](#) do not specifically define “waste water”, guidance from the Federal Environment Ministry states that waste water is considered to be any discharge into the sanitary sewer system, as governed by the *Waste Water Charges Act (AbwAg)*. A version in English can be viewed at: http://www.bmu.de/english/water_management/downloads/doc/36666.php (last accessed in February 2010), and the full text in German can be accessed through the web link provided at the end of the legislation list in this protocol section.

“Waste water disposal” is defined as the collecting, conducting, treatment, discharge and seepage of waste water as well as the drainage of sewage sludge in connection with the disposal of waste water.

[\[§18a\(1\) WHG\]](#)

A permit for discharge of waste water may only be issued if concentrations are as low as those that would result from state-of-the-art technology, unless otherwise allowed. The states are responsible for making sure that required measures are taken for those facilities not meeting discharge requirements. The states also are responsible for making sure that requirements are met for facilities which discharge water into a public waste water treatment system. [\[§7a WHG\]](#)

If a water body is negatively impacted by an exceedance of limits fixed in the discharge permit, the facility's operator is liable for the damage. [\[§22 WHG\]](#). If a facility's operator discharges contaminated waste water without a permit, he can be sued under criminal law. Furthermore, a facility operator is liable for any negative impact of surface water as defined in §22a of the [WHG](#).

“State-of-the-art” is defined as the status of the development of technically and economically feasible progressive procedures, devices and operation modes that are practically suitable for limitation of emissions as best available technology. [\[§7a\(5\) WHG\]](#)

Allowable waste water discharge levels are established in the *Waste Water Ordinance (AbwV)* and in administrative guidelines; however, allowable levels are also listed specifically within the facility's permit. The [AbwV](#) largely replaced regulations such as the *Rahmen-Abwasser VwV*. The administrative guidelines are gradually being incorporated into the appendices to the [AbwV](#). Administrative guidelines remain in effect until they have been incorporated into the Ordinance. The appendices and administrative guidelines are organized by various industry branches and activities. It is beyond the scope of this protocol to list standards for every branch and every parameter, because many standards are still in the form of administrative guidelines and also because the specific standards for an individual facility are listed in the facility's discharge permit. However, a list of applicable [AbwV](#) appendices and administrative guidelines reflecting waste water discharge standards by industrial branch and activities are found in Table [5-2](#). The complete [AbwV](#), including appendices, can be accessed through the web link provided at the end of the legislation list in this protocol section.

5.12 If the facility treats waste water containing hazardous substances, does it hold the necessary permit to do so and does it meet the specified permit conditions? [[§18b, §7a WHG](#)]

5.13 If the facility discharges waste water containing hazardous substances, does it hold the necessary permit to do so? [[§7a WHG](#)]

Notes: Generally, permits are not required for separate discharge of stormwater unless stormwater passes through waste water treatment equipment, such as an oil-water-separator, and/or is discharged directly into a surface water body. Regional/local regulations on this issue may differ, and are dependent on the respective state ordinances.

5.14 If the facility discharges waste water, does it meet applicable permit conditions, including specified discharge standards? [[§7a WHG](#)]

Notes: Discharge water cannot be diluted in order to meet discharge standards. If discharge waters are mixed, the discharge standards must be met prior to mixing. [[§3\(3-5\) AbwV](#)]

5.15 Were required water analyses conducted in accordance with the methods specified in the permit or as specified in the appendices of the [AbwV](#)? [[§4 AbwV](#)]

Notes: Separate appendices define industry-specific requirements for more than 50 different industrial operations. See Table [5-2](#) for a listing of industry-specific standards, not further covered in this protocol.

V. Facilities Handling Substances Hazardous to Water

Notes: Each State has an *Ordinance on Installations (a facility or equipment) for Storing, Filling and Handling Substances Hazardous to Water (VAwS)*, which includes underground and aboveground tank management requirements. Each Ordinance establishes the general requirements of the [WHG](#) on handling substances hazardous to water. These regulations establish requirements for inspections of these installations by recognized technical experts. These experts are not agencies or formal authorities, but people or organizations that assist the authorities in implementing regulations. For internal auditing purposes, the applicable state issued VAwS requirements should be reviewed in detail.

The following questions do not apply to facilities used for storing, filling and handling of waste water or substances, which exceed the limits of radioactivity as laid down by the *Law on Protection from Radiation*. [[§19g \(6\) WHG](#)]

5.16 If installations at the facility store, fill, produce, treat or commercially use substances hazardous to water, are such installations designed, built, operated and maintained so as not to present a risk of contaminating surface water or groundwater and to be, at a minimum, in accordance with generally accepted engineering standards? [[§19g\(1,3\) WHG](#)]

5.17 If the installations indicated in Question [5.16](#) are used at the facility, has either a suitability approval or a building type approval been obtained from the responsible authorities? [[§19h WHG](#)]

Notes: A building type approval is issued by the Superior Water Authority for tanks and other installations which are produced in mass quantities. A building type approval is normally obtained by the manufacturer of the installation and documentation of such approval is provided to the owner of the installation. A suitability approval is issued on an individual basis by the Superior Water Authority for structures which are not of a "straightforward or conventional nature" or which do not have a building type approval.

Building type approvals and suitability approvals are not applicable to structures which are of a "straightforward or conventional nature". Such structures would be those whose design is based on experience over a long period of time (conventional) or those for which a determination can be made, without special inspection, that the structure does not present a hazard to water (straightforward).

The following criteria, which are generally used to define "straightforward or conventional nature," are set forth in the state VAWS:

- Installation is classified in hazard level A according to the VAWS (see Table 6-1 in Section 6.0 of this protocol);
- Storage tanks are double walled and equipped with a leakage device;
- Single-walled storage containers are placed in a properly dimensioned secondary containment; and
- Installation parts are in compliance with technical regulations.

Secondary containment is properly dimensioned if at least 10% of the total volume of the stored substances or at least the contents of the largest single container can be retained.

Exceptions to the requirement of a building type approval or suitability approval are structures which contain the following:

- Substances which are temporarily stored in transportation containers or which are stored temporarily in containers meeting public transportation requirements (when awaiting transportation);
- Substances at the point in which they are directly involved in a production or other working process; and
- Substances used in small quantities in laboratories.

5.18 Are continual checks made for leaks and for the proper operation of safety devices associated with installations using substances hazardous to water (see Question [5.16](#))? [\[§19i\(2\) WHG\]](#)

5.19 Does the facility ensure that the following activities at installations containing substances hazardous to water are conducted by a specialist firm: [\[§19i\(1\) WHG\]](#)

- Installation of new equipment;
- Expansion;
- Maintenance;
- Reconditioning; and
- Cleaning?

Notes: A “specialist firm” is defined as a firm which has tools and equipment as well as expert personnel at its disposal and is entitled to use a quality mark of a supervisory or quality control association recognized under the building laws, or has concluded a supervisory contract with a technical supervisory association, including at least a two-year supervision period. [\[§19i\(2\) WHG\]](#) The facility itself may be recognized as a specialist firm to perform such inspections. Exceptions to the duty to use a specialist firm are regulated by State authorities under the VAWs.

5.20 Are installations containing substances hazardous to water inspected by an officially recognized expert (i.e., Technical Supervisory Organization) at the following time intervals: [\[§19i\(2\) WHG\]](#)

- Prior to initial use and after a substantial change;
- Every five years (two and a half years for facilities located in a designated water protection area);
- Before restarting after a temporary shutdown of more than one year;
- If a check is ordered because it is feared that a danger to water exists; and
- On being taken out of service?

Notes: An “officially recognized expert” is a person or a firm which is licensed by the highest state water authority. The officially recognized expert has to prove that he/she has appropriate legal and technical knowledge. The officially recognized expert takes on tasks of the authorities related to inspection of installations handling substances hazardous to water. The operator of specific installations is required to authorize an officially recognized expert to inspect these installations. The inspection results are provided by this expert as a report to the competent authority.

According to the individual State VAWs, inspections can be limited to specific installations handling substances hazardous to water. In general, inspections by officially recognized experts are required for installations classified as being within hazard level C or D, in water protection areas also for installations classified as being within hazard level B; see Table 6-1 in Section 6.0 of this protocol for information on hazard levels of installations.

5.21 Does the operator fulfill the following requirements if the filling and emptying of installations containing substances hazardous to water are conducted: [\[§19k WHG\]](#)

- A person supervises observance of the permissible loading limits and the use of the required safety devices; and
- The operator ensures the proper condition of the safety devices being used?

5.22 If the facility operates a pipeline system for the conveyance of substances that constitute a hazard to water, does the facility have a permit from the water authority for such operation? [\[§19a\(1\) WHG\]](#)

Notes: In this question only, substances that constitute a hazard to water are defined as: [\[§19a\(2\) WHG\]](#)

- Crude oil, gasoline, diesel fuel and fuel oil; and
- Other liquid or gaseous materials that would negatively affect the quality of the water.

Exceptions to this requirement include pipeline systems within the boundaries of the facility's premises or pipelines for storage purposes only. [\[§19a\(1\) WHG\]](#)

VI. Water Protection Officer

5.23 If a facility discharges more than 750 cubic meters of waste water per day, does it have one or more company-appointed water protection officer(s)? [\[§21a\(1\) WHG\]](#)

Notes: State authorities may allow modification, simplifications and/or exclusions regarding the duties of the water protection officer(s) for companies/facilities which have an voluntary eco-management and auditing scheme (EMAS) according to *Regulation (EC) No 761/2001*. [\[§21h WHG\]](#)

Notes: The following requirements pertain only to facilities for which a water protection officer is required.

5.24 Does the water protection officer fulfill the following duties: [\[§21b WHG\]](#)

- Supervises observance of regulations and conditions;
- Regularly controls the waste water installations with regard to functionality, proper operation and maintenance;
- Controls waste water measurements with regard to volume and properties;
- Informs operator about identified problems;
- Provides recommendations to fix problems;
- Works towards the use of appropriate waste water treatment procedures including procedures for proper recycling or disposal of waste generated by the waste water treatment;

- Works towards development and introduction of internal procedures to prevent or minimize waste water with regard to type and volume;
- Works towards environmentally-friendly production;
- Informs workers about the impacts to water bodies caused by the facility;
- Informs workers about devices and measures to avoid impacts to water bodies;
- Informs workers about legal water requirements; and
- Prepares an annual report which includes a description of activities conducted during the year and those planned for the next year?

Notes: A report prepared under an EMAS scheme may be submitted to fulfill this reporting obligation, provided appropriate documentation is also submitted.

[\[§21b\(3\) WHG\]](#)

Notes: The competent authority can regulate in more detail, expand or limit the duties of the water protection officer. [\[§21b\(4\) WHG\]](#)

5.25 With respect to the appointment of the water protection officer, did the facility: [\[§21c\(1\) WHG\]](#)

- Appoint the officer in writing;
- Specifically define the officer's duties according to [§21b WHG](#);
- Select an officer who has the knowledge to carry out his/her duties;
- Report the appointment to the competent authorities;
- Establish a committee to ensure coordination of duties if more than one officer is appointed; and
- Ensure the officer has the necessary support to conduct his/her duties, such as assisting personnel, providing equipment, etc.?

5.26 When the facility makes investment decisions which may affect water protection, is the officer's written opinion obtained and submitted to the decision-makers? [\[§21d\(1-2\), §21e WHG\]](#)

- 5.27** Does the facility ensure by internal organizational measures that the water protection officer can submit his recommendations and reservations directly to the appropriate decision-makers? [[§21e WHG](#)]
- 5.28** Does the facility ensure that the water protection officer is not put at a disadvantage in fulfillment of his duties? [[§21f WHG](#)]

Notes: The water protection officer is protected against dismissal during his work as a water protection officer. [[§21f\(2\) WHG](#)]

Table 5-1**List of Substances****List I**

1. Organic halogen compounds and substances from which these compounds can arise in water.
2. Organic phosphorous compounds.
3. Organic tin compounds.
4. Substances that in or through water have cancerous, mutagenic, teratogenic effects.
5. Mercury and mercury compounds.
6. Cadmium and cadmium compounds.
7. Mineral oil and hydrocarbons.
8. Cyanide.

List II

Independent substances and categories of substances that are dangerous and harmful to groundwater.

1. The following metalloids, metals, and compounds:

- Zinc	- Tin
- Copper	- Boron
- Nickel	- Beryllium
- Chromium	- Barium
- Lead	- Uranium
- Selenium	- Vanadium
- Arsenic	- Cobalt
- Antimony	- Thallium
- Molybdenum	- Tellurium
- Titanium	- Silver
2. Biocides and derivatives not mentioned in List I.
3. Substances harmful to groundwater due to taste or odor as well as compounds from which these substances can originate making the water unfit for human consumption.
4. Organic silica compounds, either toxic or persistent, with the exception of biologically harmful substances or those substances that quickly convert to non-harmful substances in water.
5. Inorganic phosphorous and elementary phosphorous.
6. Fluorides.
7. Ammonia and nitrites.

Source: Groundwater Ordinance (GrundwV), Appendix.

Table 5-2**Facilities with Industry Waste Water Discharge Standards**

Appendix No.	Title
1	Household and communal waste water
2	Brown coal and briquette
3	Milk and dairy products
4	Oil crop preparations, cooking grease and cooking oil refining
5	Production of fruit and vegetable products
6	Production of soft drinks and bottling
7	Fish processing
8	Potato processing
9	Production of coating materials and varnish
10	Meat Industry
11	Breweries
12	Production of alcohol and alcoholic beverages
13	Wood fiberboard
14	Drying of plant products for the production of feed
15	Production of glue and gelatin
16	Processing of hard coal
17	Production of ceramics
18	Sugar production
19	Production of cellulose
20	Meat meal processing (with exception of meat meal processing for human consumption)
21	Malthouses
22	Chemical industry
23	Biological waste treatment facilities
24	Iron, steel and tempering foundries
25	Leather production and fur processing
26	Stones and soils
27	Chemical or physical waste treatment (CP-installations) as well as used oil recycling

Appendix No.	Title
28	Manufacturing of paper and cardboard
29	Iron and steel manufacturing
31	Water processing, cooling systems, and steam production
32	Production and processing of latex and rubber products
33	Washing Flue gas abatement used in waste incineration
36	Production of hydrocarbons
37	Production of inorganic pigments
38	Textiles processing and refinement
39	Production of metals other than iron
40	Metalworking
41	Production and processing of glass and artificial minerals
42	Alkali chloride electrolysis
43	Production of chemical fibers, films and sponge cloth by viscose procedure as well as cellulose acetate fibers
45	Mineral oil processing
46	Hard coal coking
47	Wash water from flue gas and furnaces
48	Use of specific hazardous substances
49	Waste water containing mineral oils
50	Dentist practice
51	Above ground disposal of wastes
52	Chemical cleaning
53	Photographic processing
54	Production of semiconductor part elements
55	Laundries
56	Production of printing plates, print material and graphical products
57	Wool laundries

Source: Waste Water Ordinance (AbwV), Table of Contents to the Appendices.

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is provided for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter format does not contain the electronic links and other functionality contained in the MS Word version. The following instructions pertain to the fully linked Word version of the AQC.

Each question from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, electronic links back to the original protocol document are provided for quick access to this information when needed. To return to where you were in the AQC after following a link, use the back arrow located on the Audit Quick Check Toolbar.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X’s to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

Additional audit questions can be added to the end of the AQC. Examples might include corporate requirements or best management practices. To add more questions, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Continue to sequentially number the questions by putting your cursor in the first column and typing the desired number.

Please Note: Additional rows will be included in the sort function. It is important that you number the questions for the sort functions to work. Please consider the following sort rules when entering custom text.

Sorting Responses

The AQC sort feature is accessed from the IAPC menu item located on the far right on the Main MS Toolbar. Please note the following criteria to take full advantage of this feature.

You can change the column titles as you see fit, but the menus assume that:

- the first column contains the question number and question text;
- the second column is "Not Applicable" (N/A) entries;
- the third column is "Complies" entries; and
- the fourth column is "Does Not Comply" entries.

A question is considered "Complies" if there is any text ("X" or "YES", for instance) in the "Complies" column.

A question is considered "Incomplete" if columns 2 to 4 are all empty.

Only one column should contain a value for any given question.

Click the IAPC menu item and then select one of the following menu choices:

Sort by Question Number

- Sorts the section by question number

Sort with Incomplete first

- Sorts the section with Incomplete first, Does Not Comply next, Complies next, then N/A

Sort with Non-compliant first

- Sorts the section with Does Not Comply first, Complies next, N/A next, then Incomplete

Sort with Compliant first

- Sort the section with Complies items first, Does Not Comply next, N/A next, then Incomplete

Sort with Not Applicable last

- Sort the section with not-applicable items last (Complies first, Does Not Comply next, Incomplete next, then N/A)

For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click the IAPC menu item and choose "Sort with Non-compliant first". Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

Once the completed AQC is sorted, save or print a copy of the results. The AQC can then be re-sorted using a different option.

SECTION 5.0 WATER RESOURCES

AUDIT QUICK CHECK

SITE: _____ DATE: _____

ASSESSOR: _____

		Not Applicable	Complies	Does Not Comply
Q5.1 If the facility uses surface waters, coastal waters or groundwater (regulated waters), does it hold a current permit for their use? [<i>\$7, \$8 WHG</i>] See protocol for notes. I. Water Use Permitting Comments:				
Q5.2 If the facility holds a current water use permit, does it meet applicable permit conditions? [<i>\$7, \$8 WHG</i>] I. Water Use Permitting Comments:				
Q5.3 If the facility uses regulated waters and has had its permit approved but does not currently have possession of that permit, does it have a preliminary order issued by the authorities allowing for such use? [<i>\$9a WHG</i>] I. Water Use Permitting Comments:				

		Not Applicable	Complies	Does Not Comply
Q5.4 If the facility has used regulated waters since 12 August 1957, but does not have a permit to do so, does the facility have “old rights and authority” to use the regulated water? [<i>\$15 WHG</i>] See protocol for notes. I. Water Use Permitting Comments:				
Q5.5 Are the above-mentioned “old rights and authorities” documented in the official water book? [<i>\$16 WHG</i>] See protocol for notes. I. Water Use Permitting Comments:				
Q5.6 Does the facility ensure that it does not dispose of any solid substances into surface waters? [<i>\$26(1) WHG</i>] See protocol for notes. II. Surface Waters Comments:				
Q5.7 If the facility stores hazardous substances near surface waters, is storage done in a manner such that the water is not polluted or the quality adversely affected? [<i>\$26(2), \$32b(2) WHG</i>] II. Surface Waters Comments:				

		Not Applicable	Complies	Does Not Comply
Q5.8 If the facility stores or conveys liquid or gaseous substances through pipes that are located near surface waters, is storage and/or conveyance done in a manner such that the water is not adversely affected? [§26(2), §32b(2) WHG] II. Surface Waters Comments:				
Q5.9 If the facility stores substances that can migrate to the groundwater, are storage practices such that the groundwater will not be polluted or its quality adversely affected? [§34(2) WHG] III. Groundwater Comments:				
Q5.10 If the facility transports substances in pipelines (above ground or under ground), is the construction and operation of the pipeline system such that the groundwater will not be polluted or its quality adversely affected? [§34(2) WHG] III. Groundwater Comments:				

	Not Applicable	Complies	Does Not Comply
Q5.11 If the facility uses groundwater, does the facility fulfill the following: [§3, §4 <i>GrundwV</i>] – No direct discharge of substances in List I (see Table 5-1) into the groundwater unless the materials are needed for the production of potable water; – No disposal, storage, or deposit of substances in List I (Table 5-1), which can reach the groundwater unless a permit for such activities has been obtained; and – No direct discharge, disposal, storage, or deposit of substances found in List II (see Table 5-1) into the groundwater unless a permit for such activities has been obtained? See protocol for notes. III. Groundwater Comments:			
Q5.12 If the facility treats waste water containing hazardous substances, does it hold the necessary permit to do so and does it meet the specified permit conditions? [§18b, §7a WHG] IV. Waste Water Comments:			
Q5.13 If the facility discharges waste water containing hazardous substances, does it hold the necessary permit to do so? [§7a WHG] See protocol for notes. IV. Waste Water Comments:			

		Not Applicable	Complies	Does Not Comply
Q5.14 If the facility discharges waste water, does it meet applicable permit conditions, including specified discharge standards? [<i>§7a WHG</i>] See protocol for notes. IV. Waste Water Comments:				
Q5.15 Were required water analyses conducted in accordance with the methods specified in the permit or as specified in the appendices of the <i>AbwV</i>? [<i>§4 AbwV</i>] See protocol for notes. IV. Waste Water Comments:				
Q5.16 If installations at the facility store, fill, produce, treat or commercially use substances hazardous to water, are such installations designed, built, operated and maintained so as not to present a risk of contaminating surface water or groundwater and to be, at a minimum, in accordance with generally accepted engineering standards? [<i>§19g(1,3) WHG</i>] V. Facilities Handling Substances Hazardous to Water Comments:				

	Not Applicable	Complies	Does Not Comply
Q5.17 If the installations indicated in Question 5.16 are used at the facility, has either a suitability approval or a building type approval been obtained from the responsible authorities? [<i>§19h WHG</i>] See protocol for notes. V. Facilities Handling Substances Hazardous to Water Comments:			
Q5.18 Are continual checks made for leaks and for the proper operation of safety devices associated with installations using substances hazardous to water (see Question 5.16)? [<i>§19(2) WHG</i>] V. Facilities Handling Substances Hazardous to Water Comments:			
Q5.19 Does the facility ensure that the following activities at installations containing substances hazardous to water are conducted by a specialist firm: [<i>§19i(1) WHG</i>] – Installation of new equipment; – Expansion; – Maintenance; – Reconditioning; and – Cleaning? See protocol for notes. V. Facilities Handling Substances Hazardous to Water Comments:			

		Not Applicable	Complies	Does Not Comply
Q5.20	Are installations containing substances hazardous to water inspected by an officially recognized expert (i.e., Technical Supervisory Organization) at the following time intervals: [§19i(2) WHG] – Prior to initial use and after a substantial change; – Every five years (two and a half years for facilities located in a designated water protection area); – Before restarting after a temporary shutdown of more than one year; – If a check is ordered because it is feared that a danger to water exists; and – On being taken out of service? See protocol for notes. V. Facilities Handling Substances Hazardous to Water Comments:			
Q5.21	Does the operator fulfill the following requirements if the filling and emptying of installations containing substances hazardous to water are conducted: [§19k WHG] – A person supervises observance of the permissible loading limits and the use of the required safety devices; and – The operator ensures the proper condition of the safety devices being used? V. Facilities Handling Substances Hazardous to Water Comments:			

		Not Applicable	Complies	Does Not Comply
Q5.22	If the facility operates a pipeline system for the conveyance of substances that constitute a hazard to water, does the facility have a permit from the water authority for such operation? [<i>\$19a(1) WHG</i>] See protocol for notes. V. Facilities Handling Substances Hazardous to Water Comments:			
Q5.23	If a facility discharges more than 750 cubic meters of waste water per day, does it have one or more company-appointed water protection officer(s)? [<i>\$21a(1) WHG</i>] See protocol for notes. VI. Water Protection Officer Comments:			

		Not Applicable	Complies	Does Not Comply
Q5.24	Does the water protection officer fulfill the following duties: [<i>\$21b WHG</i>] – Supervises observance of regulations and conditions; – Regularly controls the waste water installations with regard to functionality, proper operation and maintenance; – Controls waste water measurements with regard to volume and properties; – Informs operator about identified problems; – Provides recommendations to fix problems; – Works towards the use of appropriate waste water treatment procedures including procedures for proper recycling or disposal of waste generated by the waste water treatment; – Works towards development and introduction of internal procedures to prevent or minimize waste water with regard to type and volume; – Works towards environmentally-friendly production; – Informs workers about the impacts to water bodies caused by the facility; – Informs workers about devices and measures to avoid impacts to water bodies; – Informs workers about legal water requirements; and – Prepares an annual report which includes a description of activities conducted during the year and those planned for the next year? See protocol for notes. VI. Water Protection Officer Comments:			

		Not Applicable	Complies	Does Not Comply
Q5.25	With respect to the appointment of the water protection officer, did the facility: [§21c(1) WHG] – Appoint the officer in writing; – Specifically define the officer's duties according to §21b WHG; – Select an officer who has the knowledge to carry out his/her duties; – Report the appointment to the competent authorities; – Establish a committee to ensure coordination of duties if more than one officer is appointed; and – Ensure the officer has the necessary support to conduct his/her duties, such as assisting personnel, providing equipment, etc.? VI. Water Protection Officer Comments:			
Q5.26	When the facility makes investment decisions which may affect water protection, is the officer's written opinion obtained and submitted to the decision-makers? [§21d(1-2), §21e WHG] VI. Water Protection Officer Comments:			
Q5.27	Does the facility ensure by internal organizational measures that the water protection officer can submit his recommendations and reservations directly to the appropriate decision-makers? [§21e WHG] VI. Water Protection Officer Comments:			

		Not Applicable	Complies	Does Not Comply
Q5.28	Does the facility ensure that the water protection officer is not put at a disadvantage in fulfillment of his duties? [<i>\$21f WHG</i>] See protocol for notes. VI. Water Protection Officer Comments:			

6.0 ABOVE AND BELOW GROUND TANK MANAGEMENT

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

– I. Petroleum Bulk Storage Areas - General	6-7
– II. Licensing and Approvals of Petroleum Bulk Stores	6-9
– III. Marking Requirements at Petroleum Bulk Stores	6-13
– IV. Containment Systems at Petroleum Bulk Stores	6-14
– V. Conveyance, Loading and Unloading at Petroleum Bulk Stores	6-14
– VI. Personnel Qualifications and Training at Petroleum Bulk Stores	6-16
– VII. Inspections at Petroleum Bulk Stores	6-16
– VIII. General Site Safety at Petroleum Bulk Stores	6-18
– IX. Emergency Response Planning at Petroleum Bulk Stores	6-18
– X. Emergency Systems for Petroleum Bulk Stores	6-19
– XI. First-Aid Facilities at Petroleum Bulk Stores	6-20
– XII. Walking and Working Surfaces at Petroleum Bulk Stores	6-21
– XIII. General Hygiene and Personal Protective Equipment at Petroleum Bulk Stores	6-22
– XIV. Confined Space Entry Procedures at Petroleum Bulk Stores	6-23
– XV. Retail and Private Petroleum Stores - General	6-26
– XVI. Licensing and Approvals of Retail and Private Petroleum Stores	6-28
– XVII. Personnel Requirements at Retail and Private Petroleum Stores	6-30
– XVIII. Deliveries of Petroleum at Retail and Private Petroleum Stores	6-31
– XIX. Inspections at Retail and Private Petroleum Stores	6-31
– XX. Signs and Markings Required at Retail and Private Petroleum Stores	6-32
– XXI. Confined Space Entry Procedures at Retail and Private Petroleum Stores	6-33

Tables or Appendices referenced in the protocol are located at the end of this section, along with a link to our audit scorecard, entitled [Audit Quick Check](#). This protocol applies to facilities located throughout Ireland.

Irish legislation can be accessed by searching the lists of Acts and Statutory Instruments, by year and then by number or alphabetically, at: <http://www.irishstatutebook.ie/home.html> (last accessed in July 2011).

Key Legislation and Regulations

Key legislation and regulations covered in this protocol are noted as follows:

National

- **Dangerous Substances Act, 1972 [Act No. 10 of 1972; as last amended by Safety, Health and Welfare at Work Act 2005 (Repeals) (Commencement) Order 2007, S.I. No. 300 of 2007], 1972 as amended through 2007.** This Act addresses the import, sale, purchase, handling, and marking of explosives, petroleum, and other dangerous substances. Provisions addressed include transport of dangerous goods and accidental release and response planning issues.

Notes: Section 4(2) of the *Safety, Health and Welfare at Work Act 2005* repeals this Act; however, Section 1(2) of the *Safety, Health and Welfare at Work Act 2005* specifies that Section 4(2) will commence upon the issuance of an order. The *Safety, Health and Welfare at Work Act 2005 (Repeals) (Commencement) Order 2007, S.I. No. 300 of 2007*, repealed portions of the *Factories Act, 1955* and the *Safety in Industry Act, 1980*, but not the [Dangerous Substances Act, 1972](#). To date, no orders have been issued to repeal the Act. The auditor should check by contacting the Ireland Health and Safety Authority, see <http://www.hsa.ie/eng/>, last accessed in July 2011, to see if additional orders have been issued prior to conducting an audit.

- **Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979 [S.I. No. 313 of 1979], 1979.** These Regulations establish requirements for the storage of petroleum (Class I, II and III), including general facility conditions, volume thresholds, licensing, personnel training, marking and labeling, conveying, loading and unloading, and inspecting.
- **Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979 [S.I. No. 311 of 1979; as last amended by Dangerous Substances (Retail and Private Petroleum Stores) (Amendment) Regulations, 2010, S.I. No. 628 of 2010], 1979 as amended through 2010.** These Regulations establish requirements for the storage,

conveyance and dispensing of petroleum Class I at retail and private petroleum stores and provide for the effective control of the licensing of retail petroleum.

- **Dangerous Substances (Retail and Private Petroleum Stores) (Amendment) Regulations, 1988 [S.I. No. 303 of 1988; as last amended by Dangerous Substances (Retail and Private Petroleum Stores) (Amendment) Regulations, 2010, S.I. No. 628 of 2010], 1988 as amended through 2010.** These Regulations prescribe amendments to the [Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979](#). A retail or private petroleum store must be licensed by the local or harbor authority. The Regulations provide for revised safety requirements in certain circumstances for petrol filling stations, constructed before the 1979 Regulations commenced, to enable them to be licensed to continue to operate.

European Union

None.

This protocol section updates information contained in the prior version (2009). Specific additions, deletions and other changes made relative to the earlier version of the protocol are summarized in Appendix 6-A.

Topics and Questions

Notes: Question [6.1](#) through Question [6.80](#) apply to the storage, conveying, loading and unloading of petroleum at three categories of petroleum bulk storage areas (i.e., distribution stores, major distribution stores and private bulk stores - see below). Definitions for words used in these questions are as follows: [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulations 2 and 16\(2\)](#)] and [[Dangerous Substances Act, 1972, Sections 2 and 20](#)]

- “Authorized person” means, in relation to a store, a licensee, owner or contractor who is competent to carry out duties connected with the safe keeping or conveying of petroleum or an employee or other person authorized in writing to carry out such duties and competent to do so;
- “Commercial butane” means a hydrocarbon mixture consisting mainly of butane or butylene or any mixture containing butane or butylene;
- “Commercial propane” means a hydrocarbon mixture consisting mainly of propane or propylene or any mixture containing propane or propylene;
- “Competent person” means a person possessing adequate knowledge, training and ability to perform his/her duties or work in such a manner as to prevent, so far as practicable, risk of injury;
- “Container compound” is an area located in a safe position in the open air at a store and used for the keeping or storage of containers;
- “Container store” is a container storage area of adequate fire-resistance construction for the safe keeping or storage of containers in or at the store;
- “Distribution store” is a place or premises used for the keeping for sale in whole or in part of:
 - Petroleum Class I not exceeding 5,000 cubic meters (equivalent to about five million liters) in capacity; or
 - Petroleum Class III and either petroleum Class I or Class II not exceeding, in aggregate, 7,000 cubic meters in total capacity;
- “Liquefied natural gas” means a hydrocarbon mixture consisting mainly of methane from an oil-field source and held in a liquefied state by the application of pressure or refrigeration or pressure and refrigeration;

- “Liquefied petroleum gas” means commercial butane or commercial propane or any mixture containing commercial butane or commercial propane;
- “Major distribution store” is a refinery tank-farm or similar place or premises used for the keeping for sale in whole or in part or for transshipment of:
 - Petroleum Class I exceeding 5,000 cubic meters in capacity; or
 - Petroleum Class III and either petroleum Class I or Class II exceeding, in aggregate, 7,000 cubic meters in total capacity;
- “Petroleum” except where the context otherwise requires, means liquid petroleum Class I, petroleum Class II or petroleum Class III;
- “Petroleum Class I” is petroleum-spirit (i.e., a petroleum at normal atmospheric pressure that gives off a flammable vapor at a temperature of less than 22.8 degrees Celsius) tested in accordance with Regulations under Section 20 of the [Dangerous Substances Act, 1972](#);
- “Petroleum Class II” is petroleum which when tested at normal atmospheric pressure in accordance with Regulations under Section 20 of the [Dangerous Substances Act, 1972](#) gives off a flammable vapor at a temperature of not less than 22.8 degrees Celsius and not more than 60 degrees Celsius;
- “Petroleum Class III” is petroleum which when tested at normal atmospheric pressure in accordance with Regulations under Section 20 of the [Dangerous Substances Act, 1972](#) gives off a flammable vapor at a temperature exceeding 60 degrees Celsius;
- “Petroleum spirit” is petroleum which, at normal atmospheric pressure, gives off a flammable vapor at a temperature of less than 22.8 degrees Celsius;
- “Private bulk stores” are places used for keeping (other than for sale or resale in whole or in part):
 - Under a license, petroleum Class I, exceeding 13,638 liters (three gallons) in liquid quantity but excluding petroleum Class I kept in conformity with the *Dangerous Substances Act (Retail and Private Petroleum Stores) Regulations 1979* (which covers storage for use in any engine or in connection with the propulsion of a vehicle, ship, vessel, boat or aircraft, of any kind (i.e., a gas station or private vehicle re-fueling station) as covered later in this section of the protocol); or

- An aggregate quantity of petroleum Class II and petroleum Class III exceeding five cubic meters in liquid quantity, but excluding a store used solely for the storage of petroleum Class II;
- “Store,” except where the context otherwise requires, means a distribution store, major distribution store or private bulk store;
- “Tank” means a suitable leak-proof tank, container, demountable tank, fixed tank, self-bearing tank or tank having a capacity exceeding 1 cubic meter and mounted, fixed or secured on a tank-vehicle or rail tank wagon designed and used for conveying or delivering petroleum Class I or petroleum Class II to or at a store, but does not include a fuel tank; and
- “Vertical storage tank” is a fixed roof storage tank or a floating roof storage tank at a petroleum bulk store.

Terms such as “adequate,” “sufficient,” and “suitable” are generally not defined in the legislation covered in this protocol section.

The [*Dangerous Substances Act, 1972*](#), referenced throughout this protocol section, are available at the Irish Statute Book website provided at the beginning of this protocol section.

This subsection does not apply to any separation, refining or processing of petroleum at a refinery or to any auxiliary tank or vessel used for the temporary keeping of petroleum in respect of such activities, other than any storage tank connected by pipeline to a loading or unloading location or an oil jetty, and used for the immediate keeping of petroleum unloaded from or to be loaded on to a tank or petroleum ship. [*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 5\(6\)*](#)

For further details on storage tank design specifications, storage separation distances or conveyance of petroleum by railways, refer to specific requirements in the [*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979*](#), available at the Irish Statute Book website indicated at the beginning of this protocol section.

The auditor should also consult Section 13.0 of this protocol and Section 16.0 of this protocol, concerning fire safety and chemical management, respectively, for requirements that may pertain to the storage of dangerous substances and to hazards involving dangerous substances. These protocol sections cover requirements established under the *European Communities (Major Accident Hazards of Certain Industrial Activities) Regulations, 1986, S.I. No. 292 of 1986*, and the *European Communities (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, 2000, S.I. No. 476 of 2000*. *European Communities (Major Accident Hazards of Certain Industrial Activities) Regulations, 1986* implements *Council Directive 82/501/EC on Major Accident Hazards Due to Industrial Activities Involving Dangerous Substances*, commonly known as “Seveso I.” *European Communities (Control of*

Major Accident Hazards Involving Dangerous Substances) Regulations, 2000 implements “Seveso II,” supercedes parts of Seveso I, and establishes new provisions pertaining to major accidents by setting forth requirements to limit the effects of accidents and provide response measures for all facilities that use dangerous substances.

Section 14.0 of this protocol, “Transport of Dangerous Goods,” includes additional requirements regarding the transport of dangerous goods.

I. Petroleum Bulk Storage Areas - General

6.1 Does the facility ensure that no aboveground or underground storage tank at a store has a nominal liquid capacity exceeding the following: [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 19\(1\)\]](#)

- 60,000 liters of petroleum Class I; and
- 90,000 liters of petroleum Class II?

6.2 Unless otherwise allowed in a license, does the facility prohibit the delivery, storage or dispensing of the following substances at the store: [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 16\]](#)

- Commercial butane;
- Commercial propane;
- Liquefied petroleum gas;
- Liquefied natural gas;
- Carbide of calcium; and
- Any other flammable, explosive or dangerous substance likely to cause risk of injury?

Notes: Definitions of the substances listed in this question are defined at the beginning of this protocol section, and in Regulation 16(2) of the [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979\]](#). Carbide of calcium is not defined the Regulations.

See Section 16.0 of this protocol for specific requirements associated with liquefied petroleum gas (LPG).

- 6.3 Unless otherwise permitted in a condition attached to a license, does the facility prohibit the overnight storage of petroleum Class I in a tank? [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 17\(7\)*](#)]
- 6.4 Does every storage tank at the store have a device or means of measuring the quantity of petroleum in the tank? [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 25\(2\)\(c\)*](#)]
- 6.5 Does the facility ensure that storage tanks are not filled beyond their rated capacity? [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 26\(g\)*](#)]
- 6.6 If the facility has storage tanks or pipelines equipped with or connected to heating devices, are there thermometers and temperature regulators to ensure that the temperature of the petroleum is maintained within safe limits? [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 39*](#)]
- 6.7 Does the facility ensure that the following requirements are met: [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 40*](#)]
- Cleaning, repair, alteration or modification is not commenced or carried out in relation to any storage tank or pipeline (or part thereof) where dangerous vapors or the risk of fire or explosion exist, unless adequate precautions are taken to prevent the escape of petroleum or risk of injury; and
 - An authorized person prepares a written report of inspections or evaluations of the safety precautions or procedures to be observed before the work of repair, alteration or modification is commenced?
- 6.8 Is the store enclosed by a non-climbable fence of at least 2.2 meters in height? [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 81\(1\)*](#)]
- 6.9 Are means of entrance into the store securely closed, fastened or locked when there are no authorized personnel present in the store? [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 81\(3\)\(a\)*](#)]

- 6.10** Are any gate valves or control devices (readily accessible to an authorized person) capable of manual operation and normally used to control the inflow or outflow of petroleum from an aboveground or underground storage tank, pipeline, retaining enclosure, or oil/water separator at a store, securely locked or enclosed to prevent their unauthorized or unlawful operation or use under the following circumstances: [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 81\(3\)\(b\)\]](#)
- When an authorized person is not present at the store; and
 - At such times when the gas valves or control devices are not required for intermittent use during a working day or shift in connection with any process, operation or work involving petroleum?
- 6.11** Does the facility ensure that places where persons are employed in a store (and approaches thereto) are suitably and adequately lighted by natural or artificial means? [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 81\(7\)\]](#)

II. Licensing and Approvals of Petroleum Bulk Stores

- 6.12** If the facility stores petroleum Class I in a bulk store on site, does it have a valid license from the local or harbor authority? [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulations 5 and 6\]](#)

Notes: A license must be in the form shown in Schedule 3 of the [Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979](#) (available at the Irish Statute Book website indicated at the beginning of this protocol section) and is valid for up to three years. An application for renewal of a license must be made at least three months before the existing license expires. Where only petroleum Class II and/or petroleum Class III are kept at the facility, a license is not required; however, other requirements of the [Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979](#) still apply. [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 5 and 6\]](#)

- 6.13** If the facility stores petroleum of any class in a bulk store on site, has it submitted one site plan (with four copies) containing the following details to the proper authority: [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 13\(1\)\]](#)
- The site (including the boundaries marked in red) of the store;
 - The north point on the plan; and

- The location of the following existing structures and the respective distances from each other:
 - Aboveground or underground storage tank;
 - Retaining enclosure;
 - Container store or container compound;
 - Loading or unloading location;
 - Filling or fuelling location;
 - Pipeline, surface water drainage system including piped water and open drain;
 - Building or similar structure;
 - Road and/or railway lines;
 - Fire main (as may be required); and
 - Security fence, entrance or exit gate?

Notes: The site plan must be drawn to a scale in metric units of measurement of not less than 1:500 or 1:100 (as acceptable to the authority). [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 13\(1\)\]](#)

6.14 Was the site plan accompanied by the following submittals: [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 13\(2\)\]](#)

- One plan (with four copies) showing details of the construction and dimensions and manner of installation of each of the following:
 - Aboveground storage tank and its foundation;
 - Underground storage tank and its surround and foundation;
 - Container store or container compound;
 - Loading and unloading location;
 - Filling and fuelling location;

- Security fence, entrance or exit gate;
- Pipeline or where applicable line of rails or rail track;
- Surface water drainage system outfall point, paved area and oil receptor;
- Retaining enclosure and retaining walls; and
- Building or similar structure;
- One plan (with four copies) showing all electrical apparatus installed at the store; and
- Appropriate particulars of the following:
 - Each building or place at the store where any articles, materials or substances (other than petroleum Class II or Class III) liable to spontaneous combustion or ignition or which are otherwise flammable or dangerous are kept and their amounts or quantities;
 - The amount or quantity of petroleum Class II or Class III kept at the store in each aboveground or underground storage tank, container store or container compound, filling location, or auxiliary tank at a loading location;
 - The nature of the processes or operations carried on at the store and in each building or part;
 - The maximum number of persons employed or to be employed at the store and in each building;
 - The fire-fighting installation, appliances, devices, mobile equipment, or substances to extinguish fires; and
 - The lighting arrangement?

Notes: The construction, dimensions and installation plan must be drawn to a scale in metric units of measurement of not less than 1:50. [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 13\(2\)](#)]

6.15 If the facility has a line of rails or a rail track on site, does the facility keep the following plans available for inspection (in addition to the plans described in Question [6.13](#) and Question [6.14](#)): [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 51\(3\)\]](#) **<RECORD KEEPING>**

- A site plan (to a metric scale of not less than 1:2,500) that is an extract from the relevant Ordnance Survey map or tracing thereof in linen or similar durable material and marked with the following details:
 - The location and site of the line of rails;
 - The surrounding district or area for not less than a distance of 1.70 kilometers in all directions; and
 - The boundaries (drawn to scale and colored in red) of the lands or premises not in the occupation of the carrier and which lie immediately adjacent to the line of rails or rail track or road on which the line of rails is laid; and
- One plan and specification (to a metric scale of not less than 1:50) including elevations showing details of the following:
 - Rails;
 - Construction and dimensions and manner of installation of the rail track, line of rails; and
 - Degree of radii or curvature thereof?

Notes: "Line of rails" is rails or sidings used in connection with a locomotive, rail tank wagon or rail truck for the conveyance of petroleum Class I or Class II. [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 2\(1\)\]](#)

6.16 Does the facility ensure that the maximum aggregate quantity of petroleum kept at the store is at or below the quantity specified in writing by the licensing authority? [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 17\(8\)\]](#)

6.17 Has the facility received permission from the licensing authority prior to conducting any enlargement, addition, re-construction, or alteration of a petroleum Class I or Class II store? [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 11\]](#)

Notes: Such work on a petroleum Class I store will require an amended license. [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 11\(2\)\]](#)

6.18 If the facility discontinued the use of a petroleum Class I or Class II storage tank exceeding five cubic meters in capacity, were the following measures completed before doing so: [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 10\]](#)

- Gave at least 21 days written notice to the licensing authority of the intention to discontinue the use of the tank; and
- Took all practical steps to render the tank immune from the risk of fire or explosion?

III. Marking Requirements at Petroleum Bulk Stores

6.19 If any aboveground or underground storage tanks were manufactured after 28 September 1979, is the following information permanently and clearly marked on a nameplate attached adjacent to any manhole or stamped on any manhole neck or lid: [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 18\(6\)\]](#)

- The number (if any) of the standard or specification to which the tank was manufactured;
- The test pressure (applied by the manufacturer), and the date of the test;
- The nominal capacity in cubic meters or liters of the tank or compartment; and
- The manufacturer's name or trade mark, and reference number?

6.20 Is every storage tank at the store clearly marked with or suitably identified by a unique number easily located for operational purposes? [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 26\(a\) and \(b\)\]](#)

6.21 Are the following components of each petroleum storage tank clearly marked with a unique number or letter to be easily located for operational purposes: [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 26\(d\)\]](#)

- The upper end of each dipping and filling pipe connected through the manhole lid of an underground storage tank or separate compartment of such a tank; and
- The upper end of each dipping opening of an aboveground storage tank?

- 6.22 Are pipelines and control valves of such pipelines marked with the class or classes of petroleum being conveyed in the pipelines? [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 37\(a\)](#)]
- 6.23 Are manually operated control valves of pipelines marked at control points or locations to indicate whether they are open or closed? [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 37\(b\)](#)]

IV. Containment Systems at Petroleum Bulk Stores

- 6.24 Is there a retaining wall completely surrounding any vertical storage tank or aboveground storage tank used for the storage of petroleum Class I, Class II or Class III(2)? [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 31\(1\)](#)]

Notes: "Petroleum Class III(2)" is a petroleum Class III that is stored at a temperature at or above its flash point. Refer to Regulation 31 of the [Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979](#) for details on the design specifications, capacity, surface area, and location of retaining enclosures. [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 2\(1\)](#)]

- 6.25 Do authorized personnel have safe access to and from any retaining enclosure surrounded by a wall exceeding one meter in height? [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 33](#)]
- 6.26 Does the surface area of the retaining enclosure drain to an oil/water separator? [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 32\(1\)\(a\)](#)]
- 6.27 Is the oil/water separator located outside the retaining enclosure and does it operate efficiently? [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 32\(2\)](#)]
- 6.28 Does the outlet from the retaining enclosure have a valve or other device that can be closed or shut off and locked to prevent the outflow of water? [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 32\(1\)\(b\)](#)]

V. Conveyance, Loading and Unloading at Petroleum Bulk Stores

- 6.29 During the whole period of pumping or conveying petroleum by pipeline to or from a vertical storage tank, is there an authorized person in continuous observance of the control valves? [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 38](#)]

Notes: The authorized person described in this question must be prepared to order the cessation of pumping or conveying and the closure of control valves in the event of any unusual circumstances likely to cause risk of injury. [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 38*]

6.30 Are pipelines, pumps and any associated metering devices used for the loading of a tank conveying petroleum Class I or Class II used exclusively for that purpose? [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 47(a)*]

6.31 Are the following precautions taken during the loading and unloading of a tank-vehicle at the petroleum storage area: [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 48(1)*]

- The vehicle is stopped within the appropriate area as specified by the licensing authority;
- Any inadvertent movement of the vehicle is prevented by brakes or other means;
- The engine of the vehicle is turned off; and
- Mechanical or electrical repairs or adjustments are not made to the vehicle during the loading or unloading operations?

6.32 Does the facility have adequate means for summoning assistance in an emergency during the transfer of petroleum Class I or Class II from a supply storage tank or ship to a receiving storage tank? [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 50*]

Notes: The Regulations do not define “adequate means for summoning assistance.”

6.33 Are elevated platforms, stairs or steps provided to enable the safe and efficient access to and from the top of a tank in connection with a loading or unloading operation? [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 43(1)*]

6.34 Are the roads and surface areas used by tank-vehicles at the store provided with the following: [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 14(2)*]

- Adequate drainage for surface waters; and
- Sufficient means of lighting?

Notes: The Regulations do not specify what is considered to be “adequate” drainage or “sufficient” lighting.

- 6.35 Are all roads within the petroleum bulk store that are used by tank-vehicles posted with maximum speed limit and warning notices? [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 14\(3\)*](#)]

VI. Personnel Qualifications and Training at Petroleum Bulk Stores

- 6.36 Does the facility only employ those persons to store, convey, load, and unload petroleum Class I and Class II in or about a store that have been trained (both orally and in writing) to do so safely? [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 70*](#)]
- 6.37 Do all trained persons maintain their written manual of instructions readily available for inspection? [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 70\(5\)*](#)] <RECORD KEEPING>
- 6.38 Have supervisors at the store been appointed to their positions in writing based on their knowledge, training and practical experience in the storage, conveying, loading, and unloading of petroleum? [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 71\(1\)*](#)]

VII. Inspections at Petroleum Bulk Stores

- 6.39 Does a designated supervisor complete the following duties at the store: [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 71\(2\)*](#)]
- Ensure that, before work is commenced at the start of a working day and after repairs to a storage tank, pipeline, plant, device or appliance, such equipment is inspected and, where necessary, is tested and determined to be in satisfactory working condition;
 - Ensure that on each working day every store or working place is inspected and any danger removed and any personnel exposed to such danger are withdrawn; and
 - Investigate all occurrences involving the spillage, leakage or escape of petroleum, the breakdown of any pipeline, plant, equipment, device, or appliance and the failure to observe the requirements of the [*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979*](#)?

Notes: The designated supervisor must be a person possessing adequate knowledge, training and practical experience in the storage, conveyance, loading and unloading of petroleum at a store and appointed in writing by the facility to provide supervision. [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 71\(1\)\]](#)

- 6.40** Are the reports of every inspection and investigation described in Question [6.39](#) entered and signed into a book that is accessible for inspection? [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 71\(3\)\]](#) **<RECORD KEEPING>**
- 6.41** Does the facility inspect the following components of petroleum storage tanks at the store at least once every 12 months: [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 27\(1\)\]](#)
- Control devices or devices for controlling or regulating the safe keeping of petroleum in a storage tank; and
 - Pipelines conveying petroleum to or from a storage tank?
- 6.42** Does the facility ensure that any fault or defect that was detected during an inspection is remedied immediately? [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 27\(2\)\]](#)
- 6.43** Does the facility maintain, for at least two years, each inspection report that has been signed and dated by a competent inspector? [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 27\(1\)\]](#) **<RECORD KEEPING>**
- 6.44** Does the facility maintain, for at least five years, each vertical storage tank pipeline pressure-test report that is signed and dated by a competent inspector? [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 36\(2\)\]](#) **<RECORD KEEPING>**
- 6.45** If there is leakage or suspected leakage of petroleum from a storage tank or pipeline, does the facility take steps to determine the cause of and prevent the leakage? [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 29\]](#)
- 6.46** Does the facility immediately notify the appropriate fire brigade authority of any leakage, suspected leakage, or escape of petroleum Class I or Class II from a storage tank or connecting pipeline? [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 15\(c\)\]](#)

VIII. General Site Safety at Petroleum Bulk Stores

- 6.47** Are persons prohibited from smoking within the boundaries of a petroleum bulk store, except at a safe place clearly marked on the site plan of the store? [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 67\(c\) and Schedule 1 \(3\)](#)]
- 6.48** Are designated smoking areas posted with a conspicuous notice stating, "SMOKING PERMITTED"? [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 67\(d\)](#)]
- 6.49** Are persons prohibited from wearing boots, shoes or other footwear having exposed iron, steel nails or other ferrous materials in areas where a dangerous concentration of petroleum vapors is likely to be present? [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Schedule 1 \(6\)](#)]

IX. Emergency Response Planning at Petroleum Bulk Stores

- 6.50** Is there a sufficient means of communication for summoning assistance from a fire brigade authority, ambulance authority, the Garda Síochána (National Police Force), and any other person specified in writing by the facility to be informed in an emergency? [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 73\(1\)](#)]
- 6.51** Is an up-to-date notice posted in a prominent place or places at the store containing the telephone numbers of a fire brigade authority, ambulance, medical practitioner, the Garda Síochána, and any other person required (see Question [6.50](#)) to be contacted in an emergency? [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 73\(2\)](#)]
- 6.52** If the proper authority requires so in writing, does the facility post notices with the words below in bright red letters not less than 150 millimeters in height on a white background: [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 80\(2\)](#)]
- "DANGER
FLAMMABLE LIQUIDS
NO FIRE OR NAKED LIGHTS
NO SMOKING
NO UNAUTHORISED PERSONS"?
- 6.53** Are the Notices described in Question [6.52](#) posted at the following locations at the store: [[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 80\(2\)](#)]

- At every entrance to the store or means of approach adjacent thereto; or
- At other suitable locations on, near or along the boundary fence of the store?

6.54 Are the following articles posted in a conspicuous location(s) at any store: [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 80(3)*]

- A copy of the *Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979*;
- A copy of the rules contained in the Schedule 1 of the *Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979* (available at the Irish Statute Book website indicated at the beginning of this protocol section);
- Such aspects of the *Dangerous Substances Act, 1972* as may be approved from time to time; and
- A copy of the store's license?

X. Emergency Systems for Petroleum Bulk Stores

6.55 Does the facility provide a lightning protection system for the petroleum tanks at the store? [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 28(2)*]

6.56 Is the lightning protection system thoroughly examined by a competent person at least every 18 months? [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 28(2)*]

6.57 Is a written report of the lightning system inspection maintained on site for at least three years? [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 28(2)*] **<RECORD KEEPING>**

6.58 Is electrical equipment that is located in a hazardous area at the store inspected and tested at least every 12 months? [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 66(2)*]

6.59 Is a certificate indicating the results of an electrical equipment inspection and test kept available for inspection for at least two years? [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 66(2)(f)*] **<RECORD KEEPING>**

XI. First-Aid Facilities at Petroleum Bulk Stores

6.60 Does the facility provide and constantly maintain for immediate use at a petroleum bulk store an appropriate number of first-aid boxes or cases with the following conditions: [Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 79(1)]

- Clearly and conspicuously marked with the words, “FIRST-AID”;
- Used exclusively for keeping first-aid materials or requisites;
- Containing the first-aid materials or equipment specified in Schedule 6 of the Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979 (available at the Irish Statute Book website indicated at the beginning of this protocol section); and
- Placed under the charge of a competent person:
 - Who must be readily available while a person for whom it is intended is working in the petroleum bulk store; and
 - Whose name is posted in a prominent position on or adjacent to the box or case?

Notes: For the purposes of this question, a “competent person” is one of the following: [Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 79(2)]

- A person registered in the General Division of the Register of Nurses maintained by An Bord Altranais under the *Nurses Acts, 1950 and 1961*;
- The holder of a certificate of proficiency in first-aid issued within the immediately preceding period of three years by a first-aid organization; or
- A person who is otherwise recognized as being qualified in first-aid treatment by such an organization.

6.61 Does the facility maintain a written record of the names and qualifications of all persons in charge of first-aid boxes or cases? [Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 79(4)] **<RECORD KEEPING>**

XII. Walking and Working Surfaces at Petroleum Bulk Stores

- 6.62** Is each vertical storage tank exceeding 4.5 meters in height provided with a fixed stairway proceeding directly to the roof of the tank or to an inter-connected gangway spanning the distance between any adjacent vertical storage tank? [*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 25\(2\)\(a\)*](#)
- 6.63** Are fixed stairways, as referred to in Question 6.62, designed as follows: [*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 25\(2\)\(b\)*](#)
- Secured at an angle not exceeding 45 degrees; and
 - Provided with a suitable platform at their upper ends?
- 6.64** Are all stairways and gangways at petroleum bulk stores designed as follows: [*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 25\(2\)\(c\)*](#)
- Metallic construction with a minimum clear walking space of 600 millimeters;
 - Treads of a non-slip type with a minimum width of 200 millimeters and a maximum rise of 200 millimeters; and
 - An intermediate landing when a vertical rise of the stairway exceeds six meters?
- 6.65** Is a top and bottom steel rail designed to protect a person from falling or slipping provided on both sides of a gangway or stairway of a vertical storage tank? [*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 25\(2\)\(e\)*](#)
- Notes: The top handrail must be between 0.95 meters and 1.20 meters above the walking surface; and the bottom rail must not exceed 0.30 meters above the walking surface. [*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 25\(2\)\(g\)*](#)
- 6.66** Is every ladder used for access to or egress from the roof of a vertical storage tank that does not exceed 4.5 meters in height designed as follows: [*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 25\(2\)\(h\)*](#)
- Made of steel;
 - Terminated in a suitable landing or platform provided for access to the roof;
 - Secured or fixed to the shell of the tank; and
 - Provided with a safety cage, if it exceeds four meters in height?

XIII. General Hygiene and Personal Protective Equipment at Petroleum Bulk Stores

- 6.67** Does the facility provide clean and appropriate personal protective equipment (PPE) and protective clothing (e.g., footwear, gloves or mitts) to its employees when necessary to protect against risk of injury? [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 65(4) and (5)*]
- 6.68** Does the facility maintain reports on the periodic examinations of PPE and leak detection equipment for a period of at least two years? [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 65(7)*] **<RECORD KEEPING>**
- 6.69** Does the facility provide cloakroom facilities at the store for the following purposes: [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 78(1)(a)*]
- Storage of clothing not worn during working hours;
 - Storage and drying of working clothing; and
 - Storage of personal protective clothing?
- 6.70** Does the facility provide facilities for washing at the store including the following: [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 78(1)(b)*]
- At least one suitable shower bath;
 - A sufficient number of sink basins or troughs;
 - A sufficient number of nail brushes; and
 - Means of cleaning and drying?
- 6.71** Does the facility provide facilities for taking meals including the following: [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 78(1)(c)*]
- Sufficient tables (having impervious table-top surfaces) and chairs or benches;
 - Adequate means for boiling water and heating food;
 - Arrangements to enable persons employed to store their food-containers during working hours;
 - Facilities for washing and rinsing eating utensils; and

- Means for securing and maintaining a temperature of at least 17 degrees Celsius during meal intervals?

6.72 Does the facility provide an adequate supply of drinking water at a convenient point or points clearly marked with the words, “DRINKING WATER”? [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 78\(1\)\(d\)*](#)]

6.73 Are there receptacles made of non-combustible materials for the temporary disposal of any dust or waste obtained by sweeping, cleaning or other activities at the petroleum bulk store? [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 68\(1\)*](#)]

6.74 Do the receptacles described in Question [6.73](#) comply with the following requirements: [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 68\(2\)*](#)]

- Provided with lids;
- Clearly marked with the word, “WASTE”; and
- Emptied of dust or waste at reasonable intervals?

Notes: The Regulations do not specify what a “reasonable” interval is.

XIV. Confined Space Entry Procedures at Petroleum Bulk Stores

Notes: For the purposes of this subsection, “confined space” is the interior of a storage tank, process vessel or other similar tank or enclosed space at a petroleum bulk store that contains or has contained petroleum or sludge or residue of petroleum, or in which a dangerous concentration of vapors of petroleum is likely to be present. [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 2*](#)]

General confined spaces requirements are covered in Section 12.0 of this protocol.

6.75 Does the facility prohibit persons from entering a confined space at a petroleum bulk store unless the following conditions are met: [[*Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 62\(1\)*](#)]

- The confined space is provided with a suitable manhole or other opening that affords safe means of entry into and egress from the space;

- Steps are taken to prevent the inflow of liquid, gas or vapor to the confined space;
- The confined space is ventilated or the person is supplied with a breathing apparatus that provides fresh air for respiration;
- The confined space is lit; and
- The space has been inspected by an authorized person and a written report is made of the inspection?

6.76 Does the confined space safety inspection report described in Question [6.75](#) contain the following information: [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 62\(2\)\(a\)\]](#)

- Any safety precautions taken to ensure that the person entering the confined space is not exposed to risk of injury;
- Whether or not the space is safe for entry without breathing apparatus; and
- Whether the space is safe for entry without limit of time, or subject to a specified period of time?

6.77 Does the facility prohibit persons from entering a confined space at a petroleum bulk store unless the designated supervisor has completed the following tasks: [\[Dangerous Substances \(Petroleum Bulk Stores\) Regulations, 1979, Regulation 62\(2\)\(b\)\]](#)

- Satisfied himself/herself that the safety precautions or procedures concerning the confined space entry are sufficient to prevent injury to the person;
- Issued a written authorization signed and dated by him/her to permit the entry of the person to the confined space, subject to any special conditions; and
- Posted the written authorization and, where necessary, an extract of the written inspection report, including any period of time specified, in a conspicuous location outside the confined space?

Notes: The written authorization described in this question must be kept readily available for inspection at the facility for at least three months. The designated supervisor must be a person possessing adequate knowledge, training and practical experience in the storage, conveyance, loading, and unloading of petroleum at a store and appointed in writing by the

facility to provide supervision. [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 71(1)*] <RECORD KEEPING>

6.78 Does the facility prohibit persons from entering a confined space at a petroleum bulk store without breathing apparatus unless the following actions are taken: [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 62(3)*]

- The confined space is emptied of all traces of petroleum, sludge or residue and any flammable, explosive, poisonous, or asphyxiating gas or vapor; and
- An authorized person has certified in writing the confined space to be safe for entry without breathing apparatus?

6.79 If the confined space contained leaded petroleum from which scale has not been removed from the tank shell or fittings of the tank, is a person prohibited from entering the space unless: [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 63(b)*]

- The person is wearing an appropriate breathing apparatus;
- The person is, where circumstances so require, wearing a safety harness or other suitable safety device, securely attached to a life-line that is constantly controlled and held outside the tank by another person trained in emergency and rescue operations and also provided with appropriate breathing apparatus on stand-by;
- The person is provided with protective clothing, including neck and head covering, hand protection, and protective footwear; and
- The person is, so far as practicable, in the view of another person during the whole time when he or she is in the confined space?

6.80 If the facility has personnel that clean out a storage tank that contains or has contained leaded petroleum or residue, does it ensure that any tools, breathing apparatus or other personal protective equipment or devices used are thoroughly cleaned or disinfected at the end of the day's work or shift or on completion of the cleaning operation? [*Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 64(b)*]

XV. Retail and Private Petroleum Stores - General

Notes: The remainder of this protocol section applies to retail and private petroleum stores (e.g., gas stations and private vehicle re-fueling stations). The following definitions apply to the remainder of this protocol section: [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 2\(1\)*](#)]

- “Authorized person” means either a licensee who is competent to carry out duties connected with the safe keeping or storage of petroleum Class I at a retail store or private store or an employee or a member of the family of a licensee authorized in writing to carry out such duties and competent to do so;
- “Competent person” means a person possessing adequate knowledge, training and ability to perform his duties of work in such a manner as to prevent, so far as practicable, the risk of injury;
- “Petroleum Class I” means petroleum-spirit tested in accordance with regulations under section 20 of the [*Dangerous Substances Act, 1972*](#);
- “Petroleum Class II” means petroleum which when tested at normal atmospheric pressure in accordance with regulations under section 20 of the [*Dangerous Substances Act, 1972*](#) gives off a flammable vapor at a temperature of not less than 22.8° Celsius and not more than 60° Celsius;
- “Petroleum spirit” means petroleum which at normal atmospheric pressure gives off an inflammable vapor at a temperature of less than 22.8° Celsius (73°F);
- “Private petroleum store” is a place or premises used for keeping (other than for resale in whole or in part) under petroleum Class I license for use in any engine or in connection with the propulsion of a vehicle, ship, vessel, boat or aircraft, of any kind;
- “Retail petroleum store” is a place or premises used or intended to be used for the keeping for sale to the public under a license of petroleum Class I for use in the propulsion of a vehicle, ship, vessel, boat, or aircraft or in the running of an engine of any kind;
- “Tank” means a suitable leak-proof tank container, demountable tank, fixed tank, self-bearing tank or tank having in any case a capacity exceeding one cubic meter and mounted, fixed or secured on a tank-vehicle designed and used for conveying or delivering petroleum Class I to or at a retail store or private store, but does not include a fuel tank; and

- “Underground storage tank” means an underground storage tank located below the surface of the ground at a retail store or a private store and used, subject to Regulation 9 of the [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979\]](#), exclusively for the storage of petroleum Class I.

For further details on storage tank design specifications refer to specific requirements in the [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979\]](#); these Regulations are available at the Irish Statute Book website indicated at the beginning of this protocol section. (Note that the amendments to these Regulations do not affect tank design specifications.)

- 6.81** Are persons prohibited from smoking at or in any place where petroleum Class I is present? [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 25\(1\)\]](#)
- 6.82** Is a sign posted in a conspicuous location indicating that smoking is prohibited at or in the place concerned? [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 25\(2\)\]](#)
- 6.83** Is there a means of summoning assistance in an emergency during the transfer of petroleum Class I from a tank-vehicle into an underground storage tank at a retail or private petroleum store? [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 20\(1\)\(a\)\]](#)
- 6.84** Is there a master switch capable of deactivating or cutting off the electric power supply to all dispensing pumps at the retail and private petroleum store that is not accessible to unauthorized persons? [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 42\(12\)\]](#)
- 6.85** Are petroleum Class I dispensing pumps maintained in a deactivated condition except when open for the purpose of dispensing petroleum? [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 42\(11\)\]](#)
- 6.86** If the facility has a retail petroleum store, does it provide sufficient lighting in the area where petroleum Class I is being dispensed? [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 45\(1\)\(g\)\]](#)

Notes: The Regulations specify that a general level of illumination must be maintained of not less than ten lumens per 0.10 m². The intensity of the illumination should be measured in the horizontal plane at the top of the cabinet, housing or enclosure of each dispensing pump. [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 45\(1\)\(g\)\]](#)

XVI. Licensing and Approvals of Retail and Private Petroleum Stores

- 6.87** If the facility stores petroleum Class I in a retail and private petroleum store, does it have a valid license from the Minister of Labour or the proper local or harbor authority? [[*Dangerous Substances Act, 1972, Section 21\(1\)*](#)] and [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 3\(1\)*](#)]

Notes: A license, in the prescribed format, is valid for up to three years. [[*Dangerous Substances \(Retail and Private Petroleum Stores\) \(Amendment\) Regulations, 1988, Regulation 3\(g\)*](#)]

- 6.88** Has the facility given notice in writing to the licensing authority of the presence of any underground storage tanks at the retail and private petroleum store? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) \(Amendment\) Regulations, 1988, Regulation 3\(h\)*](#)]

- 6.89** If the facility discontinued the use of a petroleum Class I underground storage tank, were the following measures completed before doing so: [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 10*](#)]

- Give at least 21 days written notice to the licensing authority of the intention to discontinue the use of the tank; and
- Take all practical steps to render the tank immune from the risk of fire or explosion?

- 6.90** Has the facility given written notice to the licensing authority at least 21 days prior to selling or removing a petroleum Class I underground storage tank from a retail or private petroleum store? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 18\(3\)*](#)]

- 6.91** Has the facility received permission from the licensing authority prior to conducting any enlargement, addition, re-construction, or alteration of a retail and private petroleum store? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 11*](#)]

Notes: Such work on a retail and private petroleum store will require an amended license. [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 11\(2\)*](#)]

6.92 Does the facility submit to the licensing authority a written notice of any leakage, suspected leakage or escape of petroleum Class I from any licensed underground storage tank (or pipeline connected to such a tank) at a retail or private petroleum store that is likely to cause risk of injury? [[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 13\(c\)](#)]

6.93 Unless specified in a condition attached to the license, does the facility prohibit the delivery, storage or dispensing of the following substances from the retail or private petroleum store: [[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 14](#)]

- Petroleum Class II;
- Commercial butane;
- Commercial propane;
- Liquefied petroleum gas;
- Liquefied natural gas;
- Carbide of calcium; and
- Any other flammable, explosive or dangerous substance likely to cause risk of injury?

Notes: See Section 16.0 of this protocol for specific requirements associated with liquefied petroleum gas (LPG).

6.94 Is the ground within a radius of at least four meters around the location where a tank-vehicle transfers petroleum Class I into an underground storage tank covered with concrete (or equivalent) that meets the following characteristics: [[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 15](#)]

- Impervious and non-absorbent so as to prevent seepage or escape of petroleum below ground;
- Maintained and in good condition; and
- Provided with a drainage system designed and graded for draining liquids off into an oil/water separator?

Notes: The location where the tank-vehicle transfers petroleum should be marked on a plan attached to the license. [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 15\(1\)*](#)]

- 6.95** Are the locations of all underground storage tanks dispensing pumps marked on a plan attached to the petroleum license? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 18\(1\)\(a\)*](#)]
- 6.96** If the facility is a retail petroleum store and allows self-service dispensing of petroleum Class I, does it have written approval from the licensing authority to do so? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 16*](#)]
- 6.97** Does the facility obtain written permission from the licensing authority prior to carrying out repairs (other than necessary maintenance) of manhole lids, their fittings or connections to an underground storage tank of petroleum Class I? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 47\(1\)*](#)]

XVII. Personnel Requirements at Retail and Private Petroleum Stores

- 6.98** Is there an authorized person on site to supervise a transfer of petroleum Class I from a tank-vehicle into an underground storage tank at a retail or private petroleum store? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 20\(1\)\(b\)*](#)]
- 6.99** Does the facility only employ those persons to store, convey or dispense petroleum Class I at a retail or private petroleum store that have been trained (including suitable instruction by a competent person before and during his/her employment) to do so safely? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 30\(1\)*](#)]
- 6.100** Are persons under the age of 15 prohibited from conducting any work or operation in connection with the conveying, dispensing or storing of petroleum Class I at a retail or private petroleum store? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 27*](#)]
- 6.101** Does the facility provide employees that unload, convey or dispense petroleum Class I with the following: [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 55*](#)]
- Clean protective clothing;

- Cloakroom facilities for storage of clothing not worn during working hours and for protecting clothing;
- Facilities for washing hands, for warming water and soap, clean towel or other means of cleaning and drying hands; and
- First-aid box or cupboard clearly marked “First-Aid”?

XVIII. Deliveries of Petroleum at Retail and Private Petroleum Stores

- 6.102** Does an authorized person from the retail or private petroleum store complete, and maintain for at least six months, a copy of the certificate shown in Schedule 4 of the [Dangerous Substances \(Retail and Private Petroleum Stores\) \(Amendment\) Regulations, 1988](#) (available at the Irish Statute Book website indicated at the beginning of this protocol section) for each delivery of petroleum Class I to an underground storage tank on site? [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulations 20\(1\)\(d\) and 20\(2\)\]](#) and [\[Dangerous Substances \(Retail and Private Petroleum Stores\) \(Amendment\) Regulations, 1988, Schedule 4\]](#) **<RECORD KEEPING>**

Notes: The authorized person must give the other copy of the two-copy certificate to the person attending the delivery tank-vehicle. [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulations 20\(1\)\(d\) and 20\(2\)\]](#)

XIX. Inspections at Retail and Private Petroleum Stores

- 6.103** If required by a condition to a license or if an underground storage tank has been in place for at least 20 years, does the facility ensure that the following procedures are conducted at the retail or private petroleum store at least every seven days: [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 28\(a\)\]](#)
- The quantity of petroleum in any underground storage tank is recorded; and
 - An accurate meter reading of each dispensing pump connected to an underground storage tank is taken and recorded?
- 6.104** Does the facility retain the records described in Question [6.103](#), as well as records of the quantities of petroleum Class I delivered to the tank, for at least six months? [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 28\(b\)\]](#) **<RECORD KEEPING>**

- 6.105** Does the facility maintain pressure test records and examination reports for each tank and/or pipeline until permanently taken out of service? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 39\(6\)*](#)] **<RECORD KEEPING>**
- 6.106** Is electrical equipment that is located in a hazardous area at the retail and private petroleum store inspected and tested at least every three years by a competent person? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 24\(3\)*](#)]
- 6.107** Is a certificate indicating the results of an electrical equipment inspection and test kept available for inspection? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 24\(3\)*](#)] **<RECORD KEEPING>**

XX. Signs and Markings Required at Retail and Private Petroleum Stores

- 6.108** Do any underground storage tanks at the retail and private petroleum store that were manufactured after 28 September 1979 have the following information on a nameplate adjacent to their manholes or stamped on the neck or lid: [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 31\(4\)*](#)]
- The number (if any) of the standard or specification to which the tank was manufactured;
 - The test pressure (applied by the manufacturer), and the date of the test;
 - The nominal capacity in cubic meters or liters of the tank or compartment; and
 - The manufacturer's name or trade mark, and reference number?
- 6.109** Is every underground storage tank (or separate compartment) for petroleum Class I permanently and clearly marked or identified by a number that is easily located for operational purposes? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 33\(1\)*](#)]
- 6.110** Is the upper end of each dipping and filling-pipe connected through the manhole lid of an underground storage tank or separate compartment clearly marked with a distinguishing number or letter marked on the tank or compartment? [[*Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 33\(4\)*](#)]

6.111 Are there clearly visible signs on each pump island or dispensing pump location with the following words in red letters not less than ten millimeters in height on a white background: [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 56\]](#)

“NO SMOKING
SWITCH ENGINE OFF BEFORE REFUELLING”?

XXI. Confined Space Entry Procedures at Retail and Private Petroleum Stores

Notes: General confined spaces requirements are covered in Section 12.0 of this protocol.

6.112 Does the facility prohibit persons from entering a confined space of an underground storage tank at a retail or private petroleum store that contains or has contained petroleum Class I unless the following requirements are met: [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 48\]](#)

- The confined space is provided with a suitable manhole that affords safe means of entry into and egress from the space;
- Steps are taken to prevent the inflow of liquid, gas or vapor to the confined space;
- The confined space is ventilated or the person is supplied with a breathing apparatus that provided fresh air for respiration;
- The confined space is lighted; and
- The space has been inspected by an authorized person and a written report is made of the inspection?

6.113 Is the confined space safety inspection report described in Question [6.112](#) maintained on site for at least 18 months? [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 48\(3\)\]](#) **<RECORD KEEPING>**

6.114 Does the facility prohibit persons from entering a confined space at a retail or private bulk store without breathing apparatus unless the following actions are taken: [\[Dangerous Substances \(Retail and Private Petroleum Stores\) Regulations, 1979, Regulation 50\]](#)

- The confined space is emptied of all traces of petroleum, sludge or residue and any flammable, explosive, poisonous, or asphyxiating gas or vapor; and

- An authorized person has certified in writing the confined space to be safe for entry without breathing apparatus?

6.115 If the confined space contains leaded petroleum from which scale has not been removed from the tank shell or fittings of the tank, is a person prohibited from entering the space unless: [*Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 49*]

- The person is wearing a appropriate breathing apparatus;
- The person is, where circumstances so require, wearing a safety harness or other suitable safety device, securely attached to a life-line that is constantly controlled and held outside the tank by another person trained in emergency and rescue operations and also provided with appropriate breathing apparatus on stand-by;
- The person is provided with protective clothing, including neck and head covering, hand protection and protective footwear; and
- The person is in the view of another person during the whole time when he or she is in the confined space?

6.116 If the facility has personnel that clean out a storage tank that contains or has contained leaded petroleum or residue, does it ensure that any tools, breathing apparatus or other personal protective equipment or devices used are thoroughly cleaned or disinfected at the end of the day's work or shift or on completion of the cleaning operation? [*Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 51(b)*]

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is provided for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter format does not contain the electronic links and other functionality contained in the MS Word version. The following instructions pertain to the fully linked Word version of the AQC.

Each question from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, electronic links back to the original protocol document are provided for quick access to this information when needed. To return to where you were in the AQC after following a link, use the back arrow located on the Audit Quick Check Toolbar.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X’s to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

Additional audit questions can be added to the end of the AQC. Examples might include corporate requirements or best management practices. To add more questions, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Continue to sequentially number the questions by putting your cursor in the first column and typing the desired number.

Please Note: Additional rows will be included in the sort function. It is important that you number the questions for the sort functions to work. Please consider the following sort rules when entering custom text.

Sorting Responses

The AQC sort feature is accessed from the IAPC menu item located on the far right on the Main MS Toolbar. Please note the following criteria to take full advantage of this feature.

You can change the column titles as you see fit, but the menus assume that:

- the first column contains the question number and question text;
- the second column is "Not Applicable" (N/A) entries;
- the third column is "Complies" entries; and
- the fourth column is "Does Not Comply" entries.

A question is considered "Complies" if there is any text ("X" or "YES", for instance) in the "Complies" column.

A question is considered "Incomplete" if columns 2 to 4 are all empty.

Only one column should contain a value for any given question.

Click the IAPC menu item and then select one of the following menu choices:

Sort by Question Number

- Sorts the section by question number

Sort with Incomplete first

- Sorts the section with Incomplete first, Does Not Comply next, Complies next, then N/A

Sort with Non-compliant first

- Sorts the section with Does Not Comply first, Complies next, N/A next, then Incomplete

Sort with Compliant first

- Sort the section with Complies items first, Does Not Comply next, N/A next, then Incomplete

Sort with Not Applicable last

- Sort the section with not-applicable items last (Complies first, Does Not Comply next, Incomplete next, then N/A)

For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click the IAPC menu item and choose "Sort with Non-compliant first". Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

Once the completed AQC is sorted, save or print a copy of the results. The AQC can then be re-sorted using a different option.

SECTION 6.0 ABOVE AND BELOW GROUND TANK MANAGEMENT**AUDIT QUICK CHECK**

SITE: _____ DATE: _____

ASSESSOR: _____

	Not Applicable	Complies	Does Not Comply
Q6.1 Does the facility ensure that no aboveground or underground storage tank at a store has a nominal liquid capacity exceeding the following: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 19(1)</i>] – 60,000 liters of petroleum Class I; and – 90,000 liters of petroleum Class II? I. Petroleum Bulk Storage Areas - General Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.2	Unless otherwise allowed in a license, does the facility prohibit the delivery, storage or dispensing of the following substances at the store: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 16</i>] – Commercial butane; – Commercial propane; – Liquefied petroleum gas; – Liquefied natural gas; – Carbide of calcium; and – Any other flammable, explosive or dangerous substance likely to cause risk of injury? See protocol for notes. I. Petroleum Bulk Storage Areas - General Comments:			
Q6.3	Unless otherwise permitted in a condition attached to a license, does the facility prohibit the overnight storage of petroleum Class I in a tank? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 17(7)</i>] I. Petroleum Bulk Storage Areas - General Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.4 Does every storage tank at the store have a device or means of measuring the quantity of petroleum in the tank? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 25(2)(c)</i>] I. Petroleum Bulk Storage Areas - General Comments:				
Q6.5 Does the facility ensure that storage tanks are not filled beyond their rated capacity? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 26(g)</i>] I. Petroleum Bulk Storage Areas - General Comments:				
Q6.6 If the facility has storage tanks or pipelines equipped with or connected to heating devices, are there thermometers and temperature regulators to ensure that the temperature of the petroleum is maintained within safe limits? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 39</i>] I. Petroleum Bulk Storage Areas - General Comments:				

	Not Applicable	Complies	Does Not Comply
Q6.7 Does the facility ensure that the following requirements are met: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 40</i>] – Cleaning, repair, alteration or modification is not commenced or carried out in relation to any storage tank or pipeline (or part thereof) where dangerous vapors or the risk of fire or explosion exist, unless adequate precautions are taken to prevent the escape of petroleum or risk of injury; and – An authorized person prepares a written report of inspections or evaluations of the safety precautions or procedures to be observed before the work of repair, alteration or modification is commenced? I. Petroleum Bulk Storage Areas - General Comments:			
Q6.8 Is the store enclosed by a non-climbable fence of at least 2.2 meters in height? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 81(1)</i>] I. Petroleum Bulk Storage Areas - General Comments:			
Q6.9 Are means of entrance into the store securely closed, fastened or locked when there are no authorized personnel present in the store? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 81(3)(a)</i>] I. Petroleum Bulk Storage Areas - General Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.10	Are any gate valves or control devices (readily accessible to an authorized person) capable of manual operation and normally used to control the inflow or outflow of petroleum from an aboveground or underground storage tank, pipeline, retaining enclosure, or oil/water separator at a store, securely locked or enclosed to prevent their unauthorized or unlawful operation or use under the following circumstances: <i>[Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 81(3)(b)]</i> – When an authorized person is not present at the store; and – At such times when the gas valves or control devices are not required for intermittent use during a working day or shift in connection with any process, operation or work involving petroleum? I. Petroleum Bulk Storage Areas - General Comments:			
Q6.11	Does the facility ensure that places where persons are employed in a store (and approaches thereto) are suitably and adequately lighted by natural or artificial means? <i>[Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 81(7)]</i> I. Petroleum Bulk Storage Areas - General Comments:			
Q6.12	If the facility stores petroleum Class I in a bulk store on site, does it have a valid license from the local or harbor authority? <i>[Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulations 5 and 6]</i> See protocol for notes. II. Licensing and Approvals of Petroleum Bulk Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.13	If the facility stores petroleum of any class in a bulk store on site, has it submitted one site plan (with four copies) containing the following details to the proper authority: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 13(1)</i>] – The site (including the boundaries marked in red) of the store; – The north point on the plan; and – The location of the following existing structures and the respective distances from each other: – Aboveground or underground storage tank; – Retaining enclosure; – Container store or container compound; – Loading or unloading location; – Filling or fuelling location; – Pipeline, surface water drainage system including piped water and open drain; – Building or similar structure; – Road and/or railway lines; – Fire main (as may be required); and – Security fence, entrance or exit gate? See protocol for notes. II. Licensing and Approvals of Petroleum Bulk Stores Comments:			
Q6.14	Was the site plan accompanied by the following submittals: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 13(2)</i>] – One plan (with four copies) showing details of the construction and dimensions and manner of installation of each of the following: – Aboveground storage tank and its foundation;			

	Not Applicable	Complies	Does Not Comply
– Underground storage tank and its surround and foundation; – Container store or container compound; – Loading and unloading location; – Filling and fuelling location; – Security fence, entrance or exit gate; – Pipeline or where applicable line of rails or rail track; – Surface water drainage system outfall point, paved area and oil receptor; – Retaining enclosure and retaining walls; and – Building or similar structure; – One plan (with four copies) showing all electrical apparatus installed at the store; and – Appropriate particulars of the following: – Each building or place at the store where any articles, materials or substances (other than petroleum Class II or Class III) liable to spontaneous combustion or ignition or which are otherwise flammable or dangerous are kept and their amounts or quantities; – The amount or quantity of petroleum Class II or Class III kept at the store in each aboveground or underground storage tank, container store or container compound, filling location, or auxiliary tank at a loading location; – The nature of the processes or operations carried on at the store and in each building or part; – The maximum number of persons employed or to be employed at the store and in each building; – The fire-fighting installation, appliances, devices, mobile equipment, or substances to extinguish fires; and – The lighting arrangement? See protocol for notes. II. Licensing and Approvals of Petroleum Bulk Stores Comments:			

	Not Applicable	Complies	Does Not Comply
Q6.15 If the facility has a line of rails or a rail track on site, does the facility keep the following plans available for inspection (in addition to the plans described in Question 6.13 and Question 6.14): [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 51(3)</i>] <RECORD KEEPING> – A site plan (to a metric scale of not less than 1:2,500) that is an extract from the relevant Ordnance Survey map or tracing thereof in linen or similar durable material and marked with the following details: – The location and site of the line of rails; – The surrounding district or area for not less than a distance of 1.70 kilometers in all directions; and – The boundaries (drawn to scale and colored in red) of the lands or premises not in the occupation of the carrier and which lie immediately adjacent to the line of rails or rail track or road on which the line of rails is laid; and – One plan and specification (to a metric scale of not less than 1:50) including elevations showing details of the following: – Rails; – Construction and dimensions and manner of installation of the rail track, line of rails; and – Degree of radii or curvature thereof? See protocol for notes. II. Licensing and Approvals of Petroleum Bulk Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.16	Does the facility ensure that the maximum aggregate quantity of petroleum kept at the store is at or below the quantity specified in writing by the licensing authority? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 17(8)</i>] II. Licensing and Approvals of Petroleum Bulk Stores Comments:			
Q6.17	Has the facility received permission from the licensing authority prior to conducting any enlargement, addition, re-construction, or alteration of a petroleum Class I or Class II store? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 11</i>] See protocol for notes. II. Licensing and Approvals of Petroleum Bulk Stores Comments:			
Q6.18	If the facility discontinued the use of a petroleum Class I or Class II storage tank exceeding five cubic meters in capacity, were the following measures completed before doing so: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 10</i>] – Gave at least 21 days written notice to the licensing authority of the intention to discontinue the use of the tank; and – Took all practical steps to render the tank immune from the risk of fire or explosion? II. Licensing and Approvals of Petroleum Bulk Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.19	If any aboveground or underground storage tanks were manufactured after 28 September 1979, is the following information permanently and clearly marked on a nameplate attached adjacent to any manhole or stamped on any manhole neck or lid: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 18(6)</i>] – The number (if any) of the standard or specification to which the tank was manufactured; – The test pressure (applied by the manufacturer), and the date of the test; – The nominal capacity in cubic meters or liters of the tank or compartment; and – The manufacturer's name or trade mark, and reference number? III. Marking Requirements at Petroleum Bulk Stores Comments:			
Q6.20	Is every storage tank at the store clearly marked with or suitably identified by a unique number easily located for operational purposes? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 26(a) and (b)</i>] III. Marking Requirements at Petroleum Bulk Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.21	Are the following components of each petroleum storage tank clearly marked with a unique number or letter to be easily located for operational purposes: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 26(d)</i>] – The upper end of each dipping and filling pipe connected through the manhole lid of an underground storage tank or separate compartment of such a tank; and – The upper end of each dipping opening of an aboveground storage tank? III. Marking Requirements at Petroleum Bulk Stores Comments:			
Q6.22	Are pipelines and control valves of such pipelines marked with the class or classes of petroleum being conveyed in the pipelines? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 37(a)</i>] III. Marking Requirements at Petroleum Bulk Stores Comments:			
Q6.23	Are manually operated control valves of pipelines marked at control points or locations to indicate whether they are open or closed? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 37(b)</i>] III. Marking Requirements at Petroleum Bulk Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.24 Is there a retaining wall completely surrounding any vertical storage tank or aboveground storage tank used for the storage of petroleum Class I, Class II or Class III(2)? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 31(1)</i>] See protocol for notes. IV. Containment Systems at Petroleum Bulk Stores Comments:				
Q6.25 Do authorized personnel have safe access to and from any retaining enclosure surrounded by a wall exceeding one meter in height? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 33</i>] IV. Containment Systems at Petroleum Bulk Stores Comments:				
Q6.26 Does the surface area of the retaining enclosure drain to an oil/water separator? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 32(1)(a)</i>] IV. Containment Systems at Petroleum Bulk Stores Comments:				
Q6.27 Is the oil/water separator located outside the retaining enclosure and does it operate efficiently? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 32(2)</i>] IV. Containment Systems at Petroleum Bulk Stores Comments:				

		Not Applicable	Complies	Does Not Comply
Q6.28	Does the outlet from the retaining enclosure have a valve or other device that can be closed or shut off and locked to prevent the outflow of water? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 32(1)(b)</i>] IV. Containment Systems at Petroleum Bulk Stores Comments:			
Q6.29	During the whole period of pumping or conveying petroleum by pipeline to or from a vertical storage tank, is there an authorized person in continuous observance of the control valves? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 38</i>] See protocol for notes. V. Conveyance, Loading and Unloading at Petroleum Bulk Stores Comments:			
Q6.30	Are pipelines, pumps and any associated metering devices used for the loading of a tank conveying petroleum Class I or Class II used exclusively for that purpose? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 47(a)</i>] V. Conveyance, Loading and Unloading at Petroleum Bulk Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.31	Are the following precautions taken during the loading and unloading of a tank-vehicle at the petroleum storage area: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 48(1)</i>] – The vehicle is stopped within the appropriate area as specified by the licensing authority; – Any inadvertent movement of the vehicle is prevented by brakes or other means; – The engine of the vehicle is turned off; and – Mechanical or electrical repairs or adjustments are not made to the vehicle during the loading or unloading operations? V. Conveyance, Loading and Unloading at Petroleum Bulk Stores Comments:			
Q6.32	Does the facility have adequate means for summoning assistance in an emergency during the transfer of petroleum Class I or Class II from a supply storage tank or ship to a receiving storage tank? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 50</i>] See protocol for notes. V. Conveyance, Loading and Unloading at Petroleum Bulk Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.33	Are elevated platforms, stairs or steps provided to enable the safe and efficient access to and from the top of a tank in connection with a loading or unloading operation? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 43(1)</i>] V. Conveyance, Loading and Unloading at Petroleum Bulk Stores Comments:			
Q6.34	Are the roads and surface areas used by tank-vehicles at the store provided with the following: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 14(2)</i>] – Adequate drainage for surface waters; and – Sufficient means of lighting? See protocol for notes. V. Conveyance, Loading and Unloading at Petroleum Bulk Stores Comments:			
Q6.35	Are all roads within the petroleum bulk store that are used by tank-vehicles posted with maximum speed limit and warning notices? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 14(3)</i>] V. Conveyance, Loading and Unloading at Petroleum Bulk Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.36 Does the facility only employ those persons to store, convey, load, and unload petroleum Class I and Class II in or about a store that have been trained (both orally and in writing) to do so safely? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 70</i>] VI. Personnel Qualifications and Training at Petroleum Bulk Stores Comments:				
Q6.37 Do all trained persons maintain their written manual of instructions readily available for inspection? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 70(5)</i>] <RECORD KEEPING> VI. Personnel Qualifications and Training at Petroleum Bulk Stores Comments:				
Q6.38 Have supervisors at the store been appointed to their positions in writing based on their knowledge, training and practical experience in the storage, conveying, loading, and unloading of petroleum? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 71(1)</i>] VI. Personnel Qualifications and Training at Petroleum Bulk Stores Comments:				

	Not Applicable	Complies	Does Not Comply
Q6.39 Does a designated supervisor complete the following duties at the store: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 71(2)</i>] – Ensure that, before work is commenced at the start of a working day and after repairs to a storage tank, pipeline, plant, device or appliance, such equipment is inspected and, where necessary, is tested and determined to be in satisfactory working condition; – Ensure that on each working day every store or working place is inspected and any danger removed and any personnel exposed to such danger are withdrawn; and – Investigate all occurrences involving the spillage, leakage or escape of petroleum, the breakdown of any pipeline, plant, equipment, device, or appliance and the failure to observe the requirements of the <i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979</i>? See protocol for notes. VII. Inspections at Petroleum Bulk Stores Comments:			
Q6.40 Are the reports of every inspection and investigation described in Question 6.39 entered and signed into a book that is accessible for inspection? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 71(3)</i>] <RECORD KEEPING> VII. Inspections at Petroleum Bulk Stores Comments:			

	Not Applicable	Complies	Does Not Comply
Q6.41 Does the facility inspect the following components of petroleum storage tanks at the store at least once every 12 months: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 27(1)</i>] – Control devices or devices for controlling or regulating the safe keeping of petroleum in a storage tank; and – Pipelines conveying petroleum to or from a storage tank? VII. Inspections at Petroleum Bulk Stores Comments:			
Q6.42 Does the facility ensure that any fault or defect that was detected during an inspection is remedied immediately? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 27(2)</i>] VII. Inspections at Petroleum Bulk Stores Comments:			
Q6.43 Does the facility maintain, for at least two years, each inspection report that has been signed and dated by a competent inspector? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 27(1)</i>] <RECORD KEEPING> VII. Inspections at Petroleum Bulk Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.44 Does the facility maintain, for at least five years, each vertical storage tank pipeline pressure-test report that is signed and dated by a competent inspector? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 36(2)</i>] <RECORD KEEPING> VII. Inspections at Petroleum Bulk Stores Comments:				
Q6.45 If there is leakage or suspected leakage of petroleum from a storage tank or pipeline, does the facility take steps to determine the cause of and prevent the leakage? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 29</i>] VII. Inspections at Petroleum Bulk Stores Comments:				
Q6.46 Does the facility immediately notify the appropriate fire brigade authority of any leakage, suspected leakage, or escape of petroleum Class I or Class II from a storage tank or connecting pipeline? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 15(c)</i>] VII. Inspections at Petroleum Bulk Stores Comments:				

	Not Applicable	Complies	Does Not Comply
Q6.47 Are persons prohibited from smoking within the boundaries of a petroleum bulk store, except at a safe place clearly marked on the site plan of the store? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 67(c) and Schedule 1 (3)</i>] VIII. General Site Safety at Petroleum Bulk Stores Comments:			
Q6.48 Are designated smoking areas posted with a conspicuous notice stating, "SMOKING PERMITTED"? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 67(d)</i>] VIII. General Site Safety at Petroleum Bulk Stores Comments:			
Q6.49 Are persons prohibited from wearing boots, shoes or other footwear having exposed iron, steel nails or other ferrous materials in areas where a dangerous concentration of petroleum vapors is likely to be present? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Schedule 1 (6)</i>] VIII. General Site Safety at Petroleum Bulk Stores Comments:			

	Not Applicable	Complies	Does Not Comply
Q6.50 Is there a sufficient means of communication for summoning assistance from a fire brigade authority, ambulance authority, the Garda Síochána (National Police Force), and any other person specified in writing by the facility to be informed in an emergency? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 73(1)</i>] IX. Emergency Response Planning at Petroleum Bulk Stores Comments:			
Q6.51 Is an up-to-date notice posted in a prominent place or places at the store containing the telephone numbers of a fire brigade authority, ambulance, medical practitioner, the Garda Síochána, and any other person required (see Question 6.50) to be contacted in an emergency? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 73(2)</i>] IX. Emergency Response Planning at Petroleum Bulk Stores Comments:			
Q6.52 If the proper authority requires so in writing, does the facility post notices with the words below in bright red letters not less than 150 millimeters in height on a white background: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 80(2)</i>] "DANGER FLAMMABLE LIQUIDS NO FIRE OR NAKED LIGHTS NO SMOKING NO UNAUTHORISED PERSONS" IX. Emergency Response Planning at Petroleum Bulk Stores Comments:			

	Not Applicable	Complies	Does Not Comply
Q6.53 Are the Notices described in Question 6.52 posted at the following locations at the store: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 80(2)</i>] – At every entrance to the store or means of approach adjacent thereto; or – At other suitable locations on, near or along the boundary fence of the store? IX. Emergency Response Planning at Petroleum Bulk Stores Comments:			
Q6.54 Are the following articles posted in a conspicuous location(s) at any store: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 80(3)</i>] – A copy of the <i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979</i>; – A copy of the rules contained in the Schedule 1 of the <i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979</i> (available at the Irish Statute Book website indicated at the beginning of this protocol section); – Such aspects of the <i>Dangerous Substances Act, 1972</i> as may be approved from time to time; and – A copy of the store's license? IX. Emergency Response Planning at Petroleum Bulk Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.55 Does the facility provide a lightning protection system for the petroleum tanks at the store? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 28(2)</i>] X. Emergency Systems for Petroleum Bulk Stores Comments:				
Q6.56 Is the lightning protection system thoroughly examined by a competent person at least every 18 months? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 28(2)</i>] X. Emergency Systems for Petroleum Bulk Stores Comments:				
Q6.57 Is a written report of the lightning system inspection maintained on site for at least three years? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 28(2)</i>] <RECORD KEEPING> X. Emergency Systems for Petroleum Bulk Stores Comments:				
Q6.58 Is electrical equipment that is located in a hazardous area at the store inspected and tested at least every 12 months? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 66(2)</i>] X. Emergency Systems for Petroleum Bulk Stores Comments:				

		Not Applicable	Complies	Does Not Comply
Q6.59 Is a certificate indicating the results of an electrical equipment inspection and test kept available for inspection for at least two years? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 66(2)(f)</i>] <RECORD KEEPING> X. Emergency Systems for Petroleum Bulk Stores Comments:				
Q6.60 Does the facility provide and constantly maintain for immediate use at a petroleum bulk store an appropriate number of first-aid boxes or cases with the following conditions: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 79(1)</i>] – Clearly and conspicuously marked with the words, "FIRST-AID"; – Used exclusively for keeping first-aid materials or requisites; – Containing the first-aid materials or equipment specified in Schedule 6 of the <i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979</i> (available at the Irish Statute Book website indicated at the beginning of this protocol section); and – Placed under the charge of a competent person: – Who must be readily available while a person for whom it is intended is working in the petroleum bulk store; and – Whose name is posted in a prominent position on or adjacent to the box or case? See protocol for notes. XI. First-Aid Facilities at Petroleum Bulk Stores Comments:				

	Not Applicable	Complies	Does Not Comply
Q6.61 Does the facility maintain a written record of the names and qualifications of all persons in charge of first-aid boxes or cases? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 79(4)</i>] <RECORD KEEPING> XI. First-Aid Facilities at Petroleum Bulk Stores Comments:			
Q6.62 Is each vertical storage tank exceeding 4.5 meters in height provided with a fixed stairway proceeding directly to the roof of the tank or to an inter-connected gangway spanning the distance between any adjacent vertical storage tank? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 25(2)(a)</i>] XII. Walking and Working Surfaces at Petroleum Bulk Stores Comments:			
Q6.63 Are fixed stairways, as referred to in Question 6.62, designed as follows: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 25(2)(b)</i>] – Secured at an angle not exceeding 45 degrees; and – Provided with a suitable platform at their upper ends? XII. Walking and Working Surfaces at Petroleum Bulk Stores Comments:			

	Not Applicable	Complies	Does Not Comply
Q6.64 Are all stairways and gangways at petroleum bulk stores designed as follows: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 25(2)(c)</i>] – Metallic construction with a minimum clear walking space of 600 millimeters; – Treads of a non-slip type with a minimum width of 200 millimeters and a maximum rise of 200 millimeters; and – An intermediate landing when a vertical rise of the stairway exceeds six meters? XII. Walking and Working Surfaces at Petroleum Bulk Stores Comments:			
Q6.65 Is a top and bottom steel rail designed to protect a person from falling or slipping provided on both sides of a gangway or stairway of a vertical storage tank? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 25(2)(e)</i>] See protocol for notes. XII. Walking and Working Surfaces at Petroleum Bulk Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.66	Is every ladder used for access to or egress from the roof of a vertical storage tank that does not exceed 4.5 meters in height designed as follows: [Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 25(2)(h)] – Made of steel; – Terminated in a suitable landing or platform provided for access to the roof; – Secured or fixed to the shell of the tank; and – Provided with a safety cage, if it exceeds four meters in height? XII. Walking and Working Surfaces at Petroleum Bulk Stores Comments:			
Q6.67	Does the facility provide clean and appropriate personal protective equipment (PPE) and protective clothing (e.g., footwear, gloves or mitts) to its employees when necessary to protect against risk of injury? [Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 65(4) and (5)] XIII. General Hygiene and Personal Protective Equipment at Petroleum Bulk Stores Comments:			

	Not Applicable	Complies	Does Not Comply
Q6.68 Does the facility maintain reports on the periodic examinations of PPE and leak detection equipment for a period of at least two years? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 65(7)</i>] <RECORD KEEPING> XIII. General Hygiene and Personal Protective Equipment at Petroleum Bulk Stores Comments:			
Q6.69 Does the facility provide cloakroom facilities at the store for the following purposes: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 78(1)(a)</i>] – Storage of clothing not worn during working hours; – Storage and drying of working clothing; and – Storage of personal protective clothing? XIII. General Hygiene and Personal Protective Equipment at Petroleum Bulk Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.70	Does the facility provide facilities for washing at the store including the following: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 78(1)(b)</i>] – At least one suitable shower bath; – A sufficient number of sink basins or troughs; – A sufficient number of nail brushes; and – Means of cleaning and drying? XIII. General Hygiene and Personal Protective Equipment at Petroleum Bulk Stores Comments:			
Q6.71	Does the facility provide facilities for taking meals including the following: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 78(1)(c)</i>] – Sufficient tables (having impervious table-top surfaces) and chairs or benches; – Adequate means for boiling water and heating food; – Arrangements to enable persons employed to store their food-containers during working hours; – Facilities for washing and rinsing eating utensils; and – Means for securing and maintaining a temperature of at least 17 degrees Celsius during meal intervals? XIII. General Hygiene and Personal Protective Equipment at Petroleum Bulk Stores Comments:			

	Not Applicable	Complies	Does Not Comply
Q6.72 Does the facility provide an adequate supply of drinking water at a convenient point or points clearly marked with the words, "DRINKING WATER"? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 78(1)(d)</i>] XIII. General Hygiene and Personal Protective Equipment at Petroleum Bulk Stores Comments:			
Q6.73 Are there receptacles made of non-combustible materials for the temporary disposal of any dust or waste obtained by sweeping, cleaning or other activities at the petroleum bulk store? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 68(1)</i>] XIII. General Hygiene and Personal Protective Equipment at Petroleum Bulk Stores Comments:			
Q6.74 Do the receptacles described in Question 6.73 comply with the following requirements: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 68(2)</i>] – Provided with lids; – Clearly marked with the word, "WASTE"; and – Emptied of dust or waste at reasonable intervals? See protocol for notes. XIII. General Hygiene and Personal Protective Equipment at Petroleum Bulk Stores Comments:			

	Not Applicable	Complies	Does Not Comply
Q6.75 Does the facility prohibit persons from entering a confined space at a petroleum bulk store unless the following conditions are met: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 62(1)</i>] – The confined space is provided with a suitable manhole or other opening that affords safe means of entry into and egress from the space; – Steps are taken to prevent the inflow of liquid, gas or vapor to the confined space; – The confined space is ventilated or the person is supplied with a breathing apparatus that provides fresh air for respiration; – The confined space is lit; and – The space has been inspected by an authorized person and a written report is made of the inspection? XIV. Confined Space Entry Procedures at Petroleum Bulk Stores Comments:			
Q6.76 Does the confined space safety inspection report described in Question 6.75 contain the following information: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 62(2)(a)</i>] – Any safety precautions taken to ensure that the person entering the confined space is not exposed to risk of injury; – Whether or not the space is safe for entry without breathing apparatus; and – Whether the space is safe for entry without limit of time, or subject to a specified period of time? XIV. Confined Space Entry Procedures at Petroleum Bulk Stores Comments:			

	Not Applicable	Complies	Does Not Comply
Q6.77 Does the facility prohibit persons from entering a confined space at a petroleum bulk store unless the designated supervisor has completed the following tasks: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 62(2)(b)</i>] – Satisfied himself/herself that the safety precautions or procedures concerning the confined space entry are sufficient to prevent injury to the person; – Issued a written authorization signed and dated by him/her to permit the entry of the person to the confined space, subject to any special conditions; and – Posted the written authorization and, where necessary, an extract of the written inspection report, including any period of time specified, in a conspicuous location outside the confined space? See protocol for notes. XIV. Confined Space Entry Procedures at Petroleum Bulk Stores Comments:			
Q6.78 Does the facility prohibit persons from entering a confined space at a petroleum bulk store without breathing apparatus unless the following actions are taken: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 62(3)</i>] – The confined space is emptied of all traces of petroleum, sludge or residue and any flammable, explosive, poisonous, or asphyxiating gas or vapor; and – An authorized person has certified in writing the confined space to be safe for entry without breathing apparatus? XIV. Confined Space Entry Procedures at Petroleum Bulk Stores Comments:			

	Not Applicable	Complies	Does Not Comply
Q6.79 If the confined space contained leaded petroleum from which scale has not been removed from the tank shell or fittings of the tank, is a person prohibited from entering the space unless: [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 63(b)</i>] – The person is wearing an appropriate breathing apparatus; – The person is, where circumstances so require, wearing a safety harness or other suitable safety device, securely attached to a life-line that is constantly controlled and held outside the tank by another person trained in emergency and rescue operations and also provided with appropriate breathing apparatus on stand-by; – The person is provided with protective clothing, including neck and head covering, hand protection, and protective footwear; and – The person is, so far as practicable, in the view of another person during the whole time when he or she is in the confined space? XIV. Confined Space Entry Procedures at Petroleum Bulk Stores Comments:			
Q6.80 If the facility has personnel that clean out a storage tank that contains or has contained leaded petroleum or residue, does it ensure that any tools, breathing apparatus or other personal protective equipment or devices used are thoroughly cleaned or disinfected at the end of the day's work or shift or on completion of the cleaning operation? [<i>Dangerous Substances (Petroleum Bulk Stores) Regulations, 1979, Regulation 64(b)</i>] XIV. Confined Space Entry Procedures at Petroleum Bulk Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.81	Are persons prohibited from smoking at or in any place where petroleum Class I is present? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 25(1)</i>] XV. Retail and Private Petroleum Stores - General Comments:			
Q6.82	Is a sign posted in a conspicuous location indicating that smoking is prohibited at or in the place concerned? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 25(2)</i>] XV. Retail and Private Petroleum Stores - General Comments:			
Q6.83	Is there a means of summoning assistance in an emergency during the transfer of petroleum Class I from a tank-vehicle into an underground storage tank at a retail or private petroleum store? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 20(1)(a)</i>] XV. Retail and Private Petroleum Stores - General Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.84	Is there a master switch capable of deactivating or cutting off the electric power supply to all dispensing pumps at the retail and private petroleum store that is not accessible to unauthorized persons? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 42(12)</i>] XV. Retail and Private Petroleum Stores - General Comments:			
Q6.85	Are petroleum Class I dispensing pumps maintained in a deactivated condition except when open for the purpose of dispensing petroleum? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 42(11)</i>] XV. Retail and Private Petroleum Stores - General Comments:			
Q6.86	If the facility has a retail petroleum store, does it provide sufficient lighting in the area where petroleum Class I is being dispensed? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 45(1)(g)</i>] See protocol for notes. XV. Retail and Private Petroleum Stores - General Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.87	If the facility stores petroleum Class I in a retail and private petroleum store, does it have a valid license from the Minister of Labour or the proper local or harbor authority? [<i>Dangerous Substances Act, 1972, Section 21(1)</i>] and [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 3(1)</i>] See protocol for notes. XVI. Licensing and Approvals of Retail and Private Petroleum Stores Comments:			
Q6.88	Has the facility given notice in writing to the licensing authority of the presence of any underground storage tanks at the retail and private petroleum store? [<i>Dangerous Substances (Retail and Private Petroleum Stores) (Amendment) Regulations, 1988, Regulation 3(h)</i>] XVI. Licensing and Approvals of Retail and Private Petroleum Stores Comments:			
Q6.89	If the facility discontinued the use of a petroleum Class I underground storage tank, were the following measures completed before doing so: [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 10</i>] – Give at least 21 days written notice to the licensing authority of the intention to discontinue the use of the tank; and – Take all practical steps to render the tank immune from the risk of fire or explosion? XVI. Licensing and Approvals of Retail and Private Petroleum Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.90	Has the facility given written notice to the licensing authority at least 21 days prior to selling or removing a petroleum Class I underground storage tank from a retail or private petroleum store? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 18(3)</i>] XVI. Licensing and Approvals of Retail and Private Petroleum Stores Comments:			
Q6.91	Has the facility received permission from the licensing authority prior to conducting any enlargement, addition, re-construction, or alteration of a retail and private petroleum store? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 11</i>] See protocol for notes. XVI. Licensing and Approvals of Retail and Private Petroleum Stores Comments:			
Q6.92	Does the facility submit to the licensing authority a written notice of any leakage, suspected leakage or escape of petroleum Class I from any licensed underground storage tank (or pipeline connected to such a tank) at a retail or private petroleum store that is likely to cause risk of injury? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 13(c)</i>] XVI. Licensing and Approvals of Retail and Private Petroleum Stores Comments:			

	Not Applicable	Complies	Does Not Comply
Q6.93 Unless specified in a condition attached to the license, does the facility prohibit the delivery, storage or dispensing of the following substances from the retail or private petroleum store: <i>[Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 14]</i> – Petroleum Class II; – Commercial butane; – Commercial propane; – Liquefied petroleum gas; – Liquefied natural gas; – Carbide of calcium; and – Any other flammable, explosive or dangerous substance likely to cause risk of injury? See protocol for notes. XVI. Licensing and Approvals of Retail and Private Petroleum Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.94	Is the ground within a radius of at least four meters around the location where a tank-vehicle transfers petroleum Class I into an underground storage tank covered with concrete (or equivalent) that meets the following characteristics: [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 15</i>] – Impervious and non-absorbent so as to prevent seepage or escape of petroleum below ground; – Maintained and in good condition; and – Provided with a drainage system designed and graded for draining liquids off into an oil/water separator? See protocol for notes. XVI. Licensing and Approvals of Retail and Private Petroleum Stores Comments:			
Q6.95	Are the locations of all underground storage tanks dispensing pumps marked on a plan attached to the petroleum license? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 18(1)(a)</i>] XVI. Licensing and Approvals of Retail and Private Petroleum Stores Comments:			
Q6.96	If the facility is a retail petroleum store and allows self-service dispensing of petroleum Class I, does it have written approval from the licensing authority to do so? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 16</i>] XVI. Licensing and Approvals of Retail and Private Petroleum Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.97	Does the facility obtain written permission from the licensing authority prior to carrying out repairs (other than necessary maintenance) of manhole lids, their fittings or connections to an underground storage tank of petroleum Class I? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 47(1)</i>] XVI. Licensing and Approvals of Retail and Private Petroleum Stores Comments:			
Q6.98	Is there an authorized person on site to supervise a transfer of petroleum Class I from a tank-vehicle into an underground storage tank at a retail or private petroleum store? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 20(1)(b)</i>] XVII. Personnel Requirements at Retail and Private Petroleum Stores Comments:			
Q6.99	Does the facility only employ those persons to store, convey or dispense petroleum Class I at a retail or private petroleum store that have been trained (including suitable instruction by a competent person before and during his/her employment) to do so safely? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 30(1)</i>] XVII. Personnel Requirements at Retail and Private Petroleum Stores Comments:			

	Not Applicable	Complies	Does Not Comply
Q6.100 Are persons under the age of 15 prohibited from conducting any work or operation in connection with the conveying, dispensing or storing of petroleum Class I at a retail or private petroleum store? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 27</i>] XVII. Personnel Requirements at Retail and Private Petroleum Stores Comments:			
Q6.101 Does the facility provide employees that unload, convey or dispense petroleum Class I with the following: [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 55</i>] – Clean protective clothing; – Cloakroom facilities for storage of clothing not worn during working hours and for protecting clothing; – Facilities for washing hands, for warming water and soap, clean towel or other means of cleaning and drying hands; and – First-aid box or cupboard clearly marked "First-Aid"? XVII. Personnel Requirements at Retail and Private Petroleum Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.102	Does an authorized person from the retail or private petroleum store complete, and maintain for at least six months, a copy of the certificate shown in Schedule 4 of the <i>Dangerous Substances (Retail and Private Petroleum Stores) (Amendment) Regulations, 1988</i> (available at the Irish Statute Book website indicated at the beginning of this protocol section) for each delivery of petroleum Class I to an underground storage tank on site? [Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulations 20(1)(d) and 20(2)] and [Dangerous Substances (Retail and Private Petroleum Stores) (Amendment) Regulations, 1988, Schedule 4] <RECORD KEEPING> See protocol for notes. XVIII. Deliveries of Petroleum at Retail and Private Petroleum Stores Comments:			
Q6.103	If required by a condition to a license or if an underground storage tank has been in place for at least 20 years, does the facility ensure that the following procedures are conducted at the retail or private petroleum store at least every seven days: [Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 28(a)] – The quantity of petroleum in any underground storage tank is recorded; and – An accurate meter reading of each dispensing pump connected to an underground storage tank is taken and recorded? XIX. Inspections at Retail and Private Petroleum Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.104 Does the facility retain the records described in Question 6.103, as well as records of the quantities of petroleum Class I delivered to the tank, for at least six months? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 28(b)</i>] <RECORD KEEPING> XIX. Inspections at Retail and Private Petroleum Stores Comments:				
Q6.105 Does the facility maintain pressure test records and examination reports for each tank and/or pipeline until permanently taken out of service? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 39(6)</i>] <RECORD KEEPING> XIX. Inspections at Retail and Private Petroleum Stores Comments:				
Q6.106 Is electrical equipment that is located in a hazardous area at the retail and private petroleum store inspected and tested at least every three years by a competent person? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 24(3)</i>] XIX. Inspections at Retail and Private Petroleum Stores Comments:				

	Not Applicable	Complies	Does Not Comply
Q6.107 Is a certificate indicating the results of an electrical equipment inspection and test kept available for inspection? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 24(3)</i>] <RECORD KEEPING> XIX. Inspections at Retail and Private Petroleum Stores Comments:			
Q6.108 Do any underground storage tanks at the retail and private petroleum store that were manufactured after 28 September 1979 have the following information on a nameplate adjacent to their manholes or stamped on the neck or lid: [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 31(4)</i>] – The number (if any) of the standard or specification to which the tank was manufactured; – The test pressure (applied by the manufacturer), and the date of the test; – The nominal capacity in cubic meters or liters of the tank or compartment; and – The manufacturer's name or trade mark, and reference number? XX. Signs and Markings Required at Retail and Private Petroleum Stores Comments:			

	Not Applicable	Complies	Does Not Comply
Q6.109 Is every underground storage tank (or separate compartment) for petroleum Class I permanently and clearly marked or identified by a number that is easily located for operational purposes? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 33(1)</i>] XX. Signs and Markings Required at Retail and Private Petroleum Stores Comments:			
Q6.110 Is the upper end of each dipping and filling-pipe connected through the manhole lid of an underground storage tank or separate compartment clearly marked with a distinguishing number or letter marked on the tank or compartment? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 33(4)</i>] XX. Signs and Markings Required at Retail and Private Petroleum Stores Comments:			
Q6.111 Are there clearly visible signs on each pump island or dispensing pump location with the following words in red letters not less than ten millimeters in height on a white background: [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 56</i>] "NO SMOKING SWITCH ENGINE OFF BEFORE REFUELLING"? XX. Signs and Markings Required at Retail and Private Petroleum Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.112	Does the facility prohibit persons from entering a confined space of an underground storage tank at a retail or private petroleum store that contains or has contained petroleum Class I unless the following requirements are met: <i>[Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 48]</i> – The confined space is provided with a suitable manhole that affords safe means of entry into and egress from the space; – Steps are taken to prevent the inflow of liquid, gas or vapor to the confined space; – The confined space is ventilated or the person is supplied with a breathing apparatus that provided fresh air for respiration; – The confined space is lighted; and – The space has been inspected by an authorized person and a written report is made of the inspection? XXI. Confined Space Entry Procedures at Retail and Private Petroleum Stores Comments:			
Q6.113	Is the confined space safety inspection report described in Question 6.112 maintained on site for at least 18 months? <i>[Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 48(3)]</i> <RECORD KEEPING> XXI. Confined Space Entry Procedures at Retail and Private Petroleum Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.114	Does the facility prohibit persons from entering a confined space at a retail or private bulk store without breathing apparatus unless the following actions are taken: <i>[Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 50]</i> – The confined space is emptied of all traces of petroleum, sludge or residue and any flammable, explosive, poisonous, or asphyxiating gas or vapor; and – An authorized person has certified in writing the confined space to be safe for entry without breathing apparatus? XXI. Confined Space Entry Procedures at Retail and Private Petroleum Stores Comments:			
Q6.115	If the confined space contains leaded petroleum from which scale has not been removed from the tank shell or fittings of the tank, is a person prohibited from entering the space unless: <i>[Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 49]</i> – The person is wearing a appropriate breathing apparatus; – The person is, where circumstances so require, wearing a safety harness or other suitable safety device, securely attached to a life-line that is constantly controlled and held outside the tank by another person trained in emergency and rescue operations and also provided with appropriate breathing apparatus on stand-by; – The person is provided with protective clothing, including neck and head covering, hand protection and protective footwear; and – The person is in the view of another person during the whole time when he or she is in the confined space? XXI. Confined Space Entry Procedures at Retail and Private Petroleum Stores Comments:			

		Not Applicable	Complies	Does Not Comply
Q6.116	If the facility has personnel that clean out a storage tank that contains or has contained leaded petroleum or residue, does it ensure that any tools, breathing apparatus or other personal protective equipment or devices used are thoroughly cleaned or disinfected at the end of the day's work or shift or on completion of the cleaning operation? [<i>Dangerous Substances (Retail and Private Petroleum Stores) Regulations, 1979, Regulation 51(b)</i>] XXI. Confined Space Entry Procedures at Retail and Private Petroleum Stores Comments:			

7.0 COMMUNITY NOISE

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

- I. Community Noise Limits 7-2
- II. Noise Control Measures For Diesel Generator Sets 7-3

Tables or Appendices referenced in the protocol are located at the end of this section, along with a link to our audit scorecard, entitled Audit Quick Check. This protocol applies to facilities located throughout India.

A. KEY LEGISLATION AND REGULATIONS

Environmental legislation and associated amendments may be found at the following website: <http://envfor.nic.in/legis/legis.html> (last accessed in March 2010).

Key legislation and regulations covered in this protocol are noted as follows:

- **The Environment (Protection) Rules, 1986, 1986 as amended through February 5, 2010.** These Rules set forth standards, requirements, and prohibitions for emissions or discharges of environmental pollutants. The Rules also detail the Central Government procedures to take and analyze discharge and emissions samples.
- **The Noise Pollution (Regulation and Control) Rules, 2000, 2000 as amended through January 11, 2010.** These Rules regulate and control noise producing and generating sources (including industrial activity, construction activity, generator sets, loud speakers, public address systems, vehicular horns and other mechanical devices).

This protocol section updates information contained in the prior version (2008). Specific additions, deletions and other changes made relative to the earlier version of the protocol are summarized in Appendix 7-A.

B. TOPICS AND QUESTIONS

I. Community Noise Limits

- 7.1 Does the facility conduct ambient noise level monitoring within its premises to ensure that noise levels do not exceed the specified ambient air quality standards with respect to noise? [[The Noise Pollution Rules, 2000, Rule 4\(1\)](#)]

Notes: Table [7-1](#) specifies ambient air quality standards with respect to noise for industrial, commercial, and residential silence zone areas.

"Silence zone" is an area comprising not less than 100 meters around hospitals, educational institutions, courts, religious places, or any other area that is declared as such by the competent authority. [[The Noise Pollution Rules, 2000, Schedule](#)]

- 7.2 Does the facility maintain records of ambient noise level monitoring within its premises to demonstrate that the specified ambient noise level standards are not exceeded? [[The Noise Pollution Rules, 2000, Rule 4\(1\)](#)] **<RECORD KEEPING>**

- 7.3 Does the facility obtain prior permission from the relevant authority before using loud speakers/public address systems within the facility premises? [[The Noise Pollution Rules, 2000, Rule 5\(1\)](#)]

Notes: The authority may include a District Magistrate, Police Commissioner, or any other officer not below the rank of the Deputy Superintendent of Police designated for the maintenance of the ambient air quality standards with respect to noise. The use of loud speakers/public address systems are not permitted at night (between 10:00 p.m. and 6:00 a.m.) except in closed premises for communication within a building, such as conference rooms, community halls, auditoria, etc. [[The Noise Pollution Rules, 2000, Rule 5\(2\)](#)]

- 7.4 If the facility receives a violation notice from the concerned authority regarding ambient air quality standards with respect to noise, does it take the necessary actions and correct the problem to the satisfaction of the concerned authority? [[The Noise Pollution Rules, 2000, Rule 7\(2\)](#)]

Notes: If the noise level exceeds the ambient noise standards for the specified area/zone by 10 dB(A) or more, a person may make a complaint to the authority. The authority will act on the complaint and take action against the violator in accordance with the provisions of [The Noise Pollution Rules, 2000](#). [[The Noise Pollution Rules, 2000, Rule 7\(1\)](#)]

"Person" includes any company or association or body of individuals, whether incorporated or not. [[The Noise Pollution Rules, 2000, Rule 7\(1\)](#)]

II. Noise Control Measures For Diesel Generator Sets

Notes: Question [7.5](#) to Question [7.11](#) are applicable only to facilities having Diesel Generator (DG) sets with capacities of at least 5 KVA.

7.5 Are acoustic enclosures/acoustic treatments provided to rooms where DG sets are installed? [\[The EP Rules, 1986, Rule 83\(B\), as amended\]](#)

7.6 Is each acoustic enclosure/acoustic treatment for the room designed for a minimum insertion loss of 25 dB(A), or designed to meet the ambient noise standards, whichever is higher? [\[The EP Rules, 1986, Rule 83\(B\), as amended by The Environment \(Protection\) \(Second Amendment\) Rules, 1998\]](#)

Notes: "Insertion loss" is not defined in the Rules.

The measurement for insertion loss may be done at different points 0.5 meters from the acoustic enclosure/room, and then averaged. If the actual ambient noise is on the higher side, it may not be possible to verify the performance of the acoustic enclosure/acoustic treatment. Under such circumstances, the performance may be checked for noise reduction up to the actual ambient noise level, preferably during the night time. [\[The EP Rules, 1986, Rule 83\(B\), as amended by The Environment \(Protection\) \(Second Amendment\) Rules, 1998\]](#)

7.7 Is each DG set provided with an exhaust muffler having an insertion loss of 25 dB(A)? [\[The EP Rules, 1986, Rule 83\(B\), as amended by The Environment \(Protection\) \(Second Amendment\) Rules, 1998\]](#)

7.8 Has the facility taken measures to reduce the ambient noise levels outside its premises by ensuring proper siting and installation of control measures in the DG sets? [\[The EP Rules, 1986, Rule 83\(C-02\), as amended by The Environment \(Protection\) \(Second Amendment\) Rules, 1998\]](#)

7.9 During the installation of DG sets, are performance tests (for noise levels) conducted by the manufacturer, for each of the DG sets? [\[The EP Rules, 1986, Rule 83\(C-04\), as amended by The Environment \(Protection\) \(Second Amendment\) Rules, 1998\]](#)

Notes: The total sound power level of the DG set (L_w), at the user's end, must be within 2 dB(A) of the total sound power level at the manufacturing stage. L_w of a DG set should be less than $94 + \log_{10}(\text{KVA})$, where KVA is the nominal power rating of the DG set. [\[The EP Rules, 1986, Rule 83\(C-04\), as amended by The Environment \(Protection\) \(Second Amendment\) Rules, 1998\]](#)

- 7.10** During the installation of DG sets, does the facility comply with the manufacturer's recommendations? [*The EP Rules, 1986, Rule 83(C-05), as amended by The Environment (Protection) (Second Amendment) Rules, 1998*]
- 7.11** Has the facility developed routine and preventive maintenance procedures for the DG sets? [*The EP Rules, 1986, Rule 83(C-06), as amended by The Environment (Protection) (Second Amendment) Rules, 1998*]

Notes: The procedures must be developed in consultation with the DG set manufacturer. [*The EP Rules, 1986, Rule 83(C-06), as amended by The Environment (Protection) (Second Amendment) Rules, 1998*]

Table 7-1**Ambient Air Quality Standards for Noise**

Area Code	Category of Area/ Zone	Limits in dB(A) Leq	
		Day Time	Night Time
(A)	Industrial Area	75	70
(B)	Commercial Area	65	55
(C)	Residential Area	55	45
(D)	Silence Zone	50	40

Notes:

- “A,” in dB Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.
- “dB(A) Leq” denotes the time-weighted average of the level of sound in decibels on scale A that is relatable to human hearing.
- “Day Time” is from 6:00 a.m. to 10:00 p.m.
- “Decibel” is the unit in which noise is measured.
- “Leq” is energy mean of the noise level over a specified period.
- “Night Time” is from 10:00 p.m. to 6:00 a.m.
- “Silence zone” is an area comprising not less than 100 meters around hospitals, educational institutions, courts, religious places, or any other area that is declared as such by the competent authority.
- Mixed categories of areas may be declared as one of the above-mentioned categories by the competent authority.

Source: The Noise Pollution Rules, Schedule.

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is provided for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter format does not contain the electronic links and other functionality contained in the MS Word version. The following instructions pertain to the fully linked Word version of the AQC.

Each question from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, electronic links back to the original protocol document are provided for quick access to this information when needed. To return to where you were in the AQC after following a link, use the back arrow located on the Audit Quick Check Toolbar.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X’s to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

Additional audit questions can be added to the end of the AQC. Examples might include corporate requirements or best management practices. To add more questions, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Continue to sequentially number the questions by putting your cursor in the first column and typing the desired number.

Please Note: Additional rows will be included in the sort function. It is important that you number the questions for the sort functions to work. Please consider the following sort rules when entering custom text.

Sorting Responses

The AQC sort feature is accessed from the IAPC menu item located on the far right on the Main MS Toolbar. Please note the following criteria to take full advantage of this feature.

You can change the column titles as you see fit, but the menus assume that:

- the first column contains the question number and question text;
- the second column is "Not Applicable" (N/A) entries;
- the third column is "Complies" entries; and
- the fourth column is "Does Not Comply" entries.

A question is considered "Complies" if there is any text ("X" or "YES", for instance) in the "Complies" column.

A question is considered "Incomplete" if columns 2 to 4 are all empty.

Only one column should contain a value for any given question.

Click the IAPC menu item and then select one of the following menu choices:

Sort by Question Number

- Sorts the section by question number

Sort with Incomplete first

- Sorts the section with Incomplete first, Does Not Comply next, Complies next, then N/A

Sort with Non-compliant first

- Sorts the section with Does Not Comply first, Complies next, N/A next, then Incomplete

Sort with Compliant first

- Sort the section with Complies items first, Does Not Comply next, N/A next, then Incomplete

Sort with Not Applicable last

- Sort the section with not-applicable items last (Complies first, Does Not Comply next, Incomplete next, then N/A)

For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click the IAPC menu item and choose "Sort with Non-compliant first". Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

Once the completed AQC is sorted, save or print a copy of the results. The AQC can then be re-sorted using a different option.

Section 7 Audit Quick Check

SECTION 7.0 COMMUNITY NOISE

AUDIT QUICK CHECK

SITE: _____ DATE: _____

ASSESSOR: _____

	Not Applicable	Complies	Does Not Comply
Q7.1 Does the facility conduct ambient noise level monitoring within its premises to ensure that noise levels do not exceed the specified ambient air quality standards with respect to noise? [<i>The Noise Pollution Rules, 2000, Rule 4(1)</i>] See protocol for notes. I. Community Noise Limits Comments:			
Q7.2 Does the facility maintain records of ambient noise level monitoring within its premises to demonstrate that the specified ambient noise level standards are not exceeded? [<i>The Noise Pollution Rules, 2000, Rule 4(1)</i>] <RECORD KEEPING> I. Community Noise Limits Comments:			

		Not Applicable	Complies	Does Not Comply
Q7.3 Does the facility obtain prior permission from the relevant authority before using loud speakers/public address systems within the facility premises? [<i>The Noise Pollution Rules, 2000, Rule 5(1)</i>] See protocol for notes. I. Community Noise Limits Comments:				
Q7.4 If the facility receives a violation notice from the concerned authority regarding ambient air quality standards with respect to noise, does it take the necessary actions and correct the problem to the satisfaction of the concerned authority? [<i>The Noise Pollution Rules, 2000, Rule 7(2)</i>] See protocol for notes. I. Community Noise Limits Comments:				
Q7.5 Are acoustic enclosures/acoustic treatments provided to rooms where DG sets are installed? [<i>The EP Rules, 1986, Rule 83(B), as amended</i>] II. Noise Control Measures For Diesel Generator Sets Comments:				

		Not Applicable	Complies	Does Not Comply
Q7.6	Is each acoustic enclosure/acoustic treatment for the room designed for a minimum insertion loss of 25 dB(A), or designed to meet the ambient noise standards, whichever is higher? [<i>The EP Rules, 1986, Rule 83(B), as amended by The Environment (Protection) (Second Amendment) Rules, 1998</i>] See protocol for notes. II. Noise Control Measures For Diesel Generator Sets Comments:			
Q7.7	Is each DG set provided with an exhaust muffler having an insertion loss of 25 dB(A)? [<i>The EP Rules, 1986, Rule 83(B), as amended by The Environment (Protection) (Second Amendment) Rules, 1998</i>] II. Noise Control Measures For Diesel Generator Sets Comments:			
Q7.8	Has the facility taken measures to reduce the ambient noise levels outside its premises by ensuring proper siting and installation of control measures in the DG sets? [<i>The EP Rules, 1986, Rule 83(C-02), as amended by The Environment (Protection) (Second Amendment) Rules, 1998</i>] II. Noise Control Measures For Diesel Generator Sets Comments:			

		Not Applicable	Complies	Does Not Comply
Q7.9	During the installation of DG sets, are performance tests (for noise levels) conducted by the manufacturer, for each of the DG sets? [<i>The EP Rules, 1986, Rule 83(C-04), as amended by The Environment (Protection) (Second Amendment) Rules, 1998</i>] See protocol for notes. II. Noise Control Measures For Diesel Generator Sets Comments:			
Q7.10	During the installation of DG sets, does the facility comply with the manufacturer's recommendations? [<i>The EP Rules, 1986, Rule 83(C-05), as amended by The Environment (Protection) (Second Amendment) Rules, 1998</i>] II. Noise Control Measures For Diesel Generator Sets Comments:			
Q7.11	Has the facility developed routine and preventive maintenance procedures for the DG sets? [<i>The EP Rules, 1986, Rule 83(C-06), as amended by The Environment (Protection) (Second Amendment) Rules, 1998</i>] See protocol for notes. II. Noise Control Measures For Diesel Generator Sets Comments:			

8.0 PCBS

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

- Use of PCB-Containing Equipment 8-5
- Disposal of PCBs 8-11

Tables or Appendices referenced in the protocol are located at the end of this section. In addition, our audit scorecard entitled “Audit Quick Check” is included. This protocol applies to facilities located throughout France.

KEY LEGISLATION AND REGULATIONS

Key legislation and regulations covered in this protocol are noted as follows:

- **Order of 26 July 1975, On the Use of PCBs and PCTs, as amended through Order of 29 November 1984 and Order 9 September 1987 (Arrêté du 26 juillet 1975, Conditions d'emploi de PCBs et PCTs, comme modifié jusqu'au arrêté du 9 septembre 1987), 26 July 1975 as amended through 9 September 1987.** Article 9, which is the only applicable article of this Order remaining in force, states that producers and/or importers of PCBs and PCTs or PCB/PCT-containing equipment may be required to provide certain statistics in regard to PCBs.
- **Order of 9 September 1987, On the Use of PCBs and PCTs (Arrêté du 9 septembre 1987, relatif à l'utilisation des polychlorobiphényles et des polychloroterphényles), 9 September 1987.** This Order addresses requirements for use of PCBs and PCTs. It also repeals Articles 1-8 of the *Order of 8 July 1975*.
- **Environmental Code, as codified by Ordinance 2000-914 of 21 September 2000, Law 2003-591 of 3 July 2003, and Decree 2005-935 of 2 August 2005, as amended through**

Decree No. 2009-212 of 20 February 2009 (Code de l'Environnement, comme modifié jusqu'au Décret No. 2009-212 du 20 février 2009), 21 September 2000 as amended through 20 February 2009. This Code serves as the framework for French environmental law. This protocol primarily covers the requirements found in the legislative and regulatory parts of Books II and V of the Code. These Books include requirements with regard to the following: permitting for Classified Installations; environmental impact studies; air and water emissions; water use; waste management; tank management; noise management; PCB use, removal and disposal; risk/contingency planning; and chemical products management and control. Note that references to the *Nomenclature of Classified Installations* refer to the Annex to Article R. 511-9 of this Code.

- **Order of 13 February 2001 Relative to Declaration of Holding PCB and PCT Containing Devices (Arrêté du 13 février 2001 relatif à la déclaration de détention d'appareil contenant des PCB et des PCT), 13 February 2001.** This Order requires a mandatory declaration of any PCB-containing materials to the prefect's office.
- **Order of 26 February 2003 Relative to Approval of the National Plan for Decontamination and Elimination of Equipment Containing PCB and PCTs (Arrêté du 26 février 2003 portant approbation du plan national de décontamination et d'élimination des appareils contenant des PCB et PCT), 26 February 2003.** This Order establishes the National Plan for decontamination and decommissioning of all equipment containing PCBs and PCTs.
- **Decree 2009-235 of 27 February 2009 on the Organization of the Mission of the Regional Directorates for Environment, Planning and Housing (Décret n° 2009-235 du 27 février 2009 relatif à l'organisation et aux missions des directions régionales de l'environnement, de l'aménagement et du logement), 27 February 2009.** This Decree specifies that the Regional Directorates for Industry, Research and the Environment (DRIRE), the Regional Infrastructure Directorates (DRE), and the Regional Environment Directorates (DIREN) will be replaced by the Regional Directorates of Environment, Planning and Housing (DREAL) between 1 March 2009 and 1 January 2011.

The following publications are not legally binding, but have been covered in this protocol to provide guidance and best management practices:

- **Circular No. 12/86 of 11 March 1986, Recommended Measures Regarding PCBs and PCTs for Classified Installations (Circulaire No. 12/86 du 11 mars 1986, relative aux PCB-PCT Installations classées pour la protection de l'environnement- l'Arrêté type), 11 March 1986.** This Circular includes recommendations for specific requirements to be included in the prefectural authorizations for facilities that have been issued them for owning and operating PCB-containing equipment.

- **Circular No. 281 of 21 February 2001 Relative to the Marketing, Use and Elimination of PCBs and PCTs (Circulaire No. 281 du 21 février 2001 relatif à la mise sur le marché, l'utilisation et l'élimination des PCB et PCT), 21 February 2001.** This Circular summarizes the requirements relating to the marketing, use and disposal of PCBs and PCTs, as formerly contained in the *Decree No. 87-59 of 2 February 1987* and now contained in the [Environmental Code](#). It also provides a non-exhaustive list of commercial names for PCBs.

- **Circular No. 27 of 26 August 1986, On Prevention and Management of Accidents Involving PCBs (Circulaire No. 27 du 26 août 1986 relative aux PCB et PCT Installations classées pour la protection de l'environnement Rubrique 355 A - Polychlorobiphényles Prévention et gestion des accidents sur des appareils électriques), 26 August 1986.** This Circular provides prevention and management techniques for accidents involving electrical appliances containing PCBs.

The French legislation referenced in this protocol section is available through the government web sites, Legifrance and AIDA INERIS (National Institute on the Industrial Environment and Risks – "L'Institut National de l'Environnement Industriel et des Risques") at: <http://www.legifrance.gouv.fr/> (last accessed in April 2009) and by performing a Google search on "AIDA INERIS," respectively. The legislation posted on these web sites is typically available in a consolidated format.

This protocol section updates information contained in the prior version (2007). Specific additions, deletions and other changes made relative to the earlier version of the protocol are summarized in Appendix 8-A.

TOPICS AND QUESTIONS

Notes: This section integrates most of the requirements related to PCBs, including those related to air, water, waste, and industrial hygiene, as appropriate and applicable. The auditor should also consult Section 4.0 of this protocol for requirements pertaining to waste oil and hazardous materials, in general, which include PCBs/PCB-containing substances. Training-related requirements are addressed in Section 18.0 of this protocol.

The terms “PCB” and “PCT” mean polychlorobiphenyls (PCBs), polychloroterphenyls (PCTs), monomethyl-tetrachloro-diphenyl methane, monomethyl-dichloro-diphenyl methane, monomethyl-dibromo-diphenyl methane, and any mixture of these, whose total concentration of these substances is greater than 50 ppm by mass. [[Environmental Code, Article R. 543-17](#)]

The term “PCB” used generally refers to the above-mentioned substances in any mixture with a total concentration of these substances greater than 50 ppm by mass. [[Environmental Code, Article R. 543-17](#)]

Commercial terms like pyralene or askarel are frequently employed to describe PCBs. In order to assist in identification of PCBs, a non-exhaustive list of the principal commercial names for PCBs is provided in Annex 1 of the [Circular No. 281 of 21 February 2001](#), which is available through the information noted at the end of the legislation list.

The circulars covered or referenced in this section are not legally binding; they are included to provide guidance and/or information on future administrative actions. The *Circular of 11 March 1986* provides specific examples of the types of requirements recommended for inclusion in the authorizations for Classified Installations which may involve the presence or use of PCBs and PCTs. Examples of such authorization requirements that are recommended in the Circular are as follows: [[Circular No. 12/86 of 11 March 1986, items 10, 13, 15](#)]

- PCB/PCT-containing waste storage areas should be equipped with leak retention capabilities that are equal to or greater than 100% of the largest container, or 50% of the total stored volume;
- Facility operators should make a visual inspection for leaks of all PCB- or PCT-containing electrical units at least every 3 years;
- PCB- or PCT-containing electrical units should be equipped with non-reactive surge protectors and circuit breakers both above and below the unit;
- Precautionary measures should be taken to contain PCBs in the event of an equipment leak; and

- Electrical units containing PCBs or PCTs should always be in sturdy containers.

Additional guidance which is beyond the scope of this protocol with regard to PCBs may be found in the [Circular No. 27 of 26 August 1986, On Prevention and Management of Accidents Involving PCBs](#). This Circular provides prevention and management techniques for accidents involving electrical appliances with PCBs.

The Regional Directorates for Industry, Research and the Environment (DRIRE), the Regional Infrastructure Directorates (DRE), and the Regional Environment Directorates (DIREN) are being replaced by the Regional Directorates of Environment, Planning and Housing (DREAL) between 1 March 2009 and 1 January 2011. [Decree 2009-235 of 27 February 2009, Article 7](#)

Use of PCB-Containing Equipment

Notes: Question 8.1 through Question 8.3 apply to facilities that are Classified Installations in Heading No. 1180 in the *Nomenclature of Classified Installations*, which covers the following: [Environmental Code, Article R. 511-9, Annex](#)

- Use of components, devices and materials filled with, or storing new products containing more than 30 liters of product (facility subject to declaration);
- Use of filled devices and components, where the total quantity likely to be present in the facility is:
 - Greater than 1,000 liters (facility subject to authorization); or
 - Greater than 100 liters, but less than or equal to 1,000 liters (facility subject to declaration); and
- The repair, recovery, decontamination, dismantling of components, devices and materials which are filled, outside of the site of the service, when the quantity of products exceeds 50 liters (facility subject to authorization).

The *Nomenclature of Classified Installations*, as referenced in this protocol section, is currently the Annex to Article R. 511-9 of the [Environmental Code](#). This document is available at the following URL which is maintained by the Ministry of Ecology, Energy, the Sustainable Development and Planning: http://www.ecologie.gouv.fr/IMG/pdf/BrochureNom_v15-oct07.pdf (last accessed in April 2009).

Additional information regarding Classified Installations, declarations and authorizations can be found in Section 2.0 of this protocol.

- 8.1** If the facility uses equipment, machinery or components, or stores products containing more than 30 liters of PCBs/PCTs, has a declaration been submitted to the prefect? [[Environmental Code, Articles L. 511-2 and R. 511-9, Annex](#)]
- 8.2** If the facility uses components or machinery/equipment containing PCBs/PCTs in the following quantities (as a total quantity within the facility), has it submitted the following documentation or application to the prefect: [[Environmental Code, Articles L. 511-2 and R. 511-9, Annex](#)]
- More than 1,000 liters of PCBs - Authorization; and
 - More than 100 liters to less than or equal to 1,000 liters - Declaration?
- 8.3** If the facility repairs, recovers, decontaminates, or dismantles components, machinery or equipment containing PCBs/PCTs, (outside of the area where these components normally operate, either on-site or off-site), containing quantities greater than 50 liters, has it submitted an application for authorization/permit to the prefect? [[Environmental Code, Articles L. 511-2 and R. 511-9, Annex](#)]
- 8.4** If the facility has any devices with over 5 cubic decimeters capacity containing PCBs with more than 50 ppm, has it filed a holding declaration with the prefect's office as specified in the form provided in "Annexe I" of the [Order of 13 February 2001](#)? [[Order of 13 February 2001, Article 1](#)]
- 8.5** If the facility has any devices with over 5 cubic decimeters capacity containing dielectric coolant, hydraulic or insulating fluids which are contaminated or likely to be contaminated with PCBs at a concentration greater than 50 ppm, has it filed a declaration with the prefect's office that contains the following information: [[Order of 13 February 2001, Article 2](#)] and [[Environmental Code, Article R. 543-26](#)]
- Name and address of the facility;
 - Location and description of the equipment;
 - Quantity of PCBs contained in the equipment;
 - Date and type of treatment or substitution made or planned; and
 - Date of the declaration?

Notes: In the case of electric condensers, the threshold of 5 cubic meters is in relation to the total of all volumes contained in different elements of the whole unit. [[Environmental Code, Article R. 543-26](#)]

A facility whose equipment contains PCBs at a concentration of greater than 50 ppm but less than 500 ppm may file a simplified declaration containing only the following: [[Environmental Code, Article R. 543-29](#)]

- Name and address of the facility;
- Location and description of the equipment; and
- Date of the declaration.

A Classified Installation that holds a declaration or authorization is considered to meet this requirement and no additional declaration is required. [[Environmental Code, Article R.543-26](#)]

8.6 If a declaration or authorization/permit application was submitted and a prefectural authorization was subsequently issued to the facility, is the facility in compliance with the general provisions provided by the authorization? [[Environmental Code, Article R. 512-28](#)]

8.7 If the facility purchases, sells, disposes of, leases or uses equipment or items containing PCBs or the fluids themselves, does it ensure that only the following activities are conducted: [[Environmental Code, Article R. 543-20 and Article R. 543-21](#)]

- The leasing or using of equipment or articles containing PCBs, designated below, on the condition that they were in service before 4 February 1987:
 - Closed circuit electrical appliances, such as transformers, resistors and inductors;
 - Condensers with a total weight of 1 kg or more;
 - Condensers with a total weight of less than 1 kg, provided that the PCBs contained in them have an average chlorine content of less than 43% by weight and contain less than 3.5% by weight of pentachlorinated biphenyls or more highly chlorinated biphenyls;

- Heat exchangers/cooling systems, except in installations intended for the treatment of foods for human or animal consumption or the preparation of pharmaceutical or veterinary products; and
- Hydraulic systems for underground equipment in mines;
- Leasing or use of equipment containing (dichlorophenyl) (dichlorotolyl) methane, mixture of isomers whose CAS registration number is 76253-60-6, provided that they were brought into service before 18 June 1994; and
- Use of PCBs in installations devoted to technological research?

Notes: It is prohibited to place equipment in the first bullet above on the market, to separate PCBs from other substances in order to reuse the PCBs, or to fill transformers with PCBs. [\[Environmental Code, Article R. 543-22 through Article R. 543-24\]](#)

It is prohibited to hold for sale, transfer ownership of (whether paid or not), lease or use PCBs or equipment containing PCBs otherwise than in the question above. [\[Environmental Code, Article R. 543-20\]](#)

A National Decontamination and Elimination Plan for PCBs was issued in February of 2003 and came into force in March 2003. This plan provides for an inventory of equipment to be phased out, and a schedule for decontaminating and disposing of the inventoried appliances that guarantees they will be decontaminated or disposed of by 31 December 2010 at the latest. An exception is made for the transformers whose liquids contain from 50 ppm to 500 ppm by mass of PCBs/PCTs. These transformers must be disposed of at the end of their useful life. [\[Environmental Code, Article R. 543-30\]](#)

The compliance schedule for facilities without PCB elimination plans approved by the PCB Commission is summarized in Table 8-1. Facilities which have PCB elimination plans approved by the PCB Commission must conduct a plan review each year and submit plan updates to the PCB Commission as requested. In all cases, PCB-containing electrical equipment must be maintained in accordance with the *Standard NF EN 50195 of July 1997* and/or the *Standard NF EN 50225 of April 1998*. For classified facilities, the provisions of Heading 1180 in the *Nomenclature of Classified Installations* must be followed. Equipment not meeting these standards must be prioritized for decommissioning without consideration of age. Leaking equipment must be decommissioned immediately. [\[Order of 26 February, 2003, Annex, Section IV\]](#)

The complete copy of the National Plan for Decontamination and Elimination of Equipment Containing PCBs and PCTs, as well as guidance on the plan in relation to legislation, can be found at the following web site (last accessed in May 2009):

- <http://www.ecologie.gouv.fr/Plan-national-d-elimination-des.html>

8.8 Does the facility ensure that all equipment listed in Question 8.7 is labeled with an indelible marking that is at least 50 x 75 mm with the following warning: [[Order of 9 September 1987, Article 1](#)]

- “Cet appareil contient des PCB qui pourraient contaminer l'environnement et dont l'élimination est réglementée” (*This apparatus contains PCB which could contaminate the environment and its disposal is regulated*)?

Notes: If the label of a transformer is not visible in the principal area of the room in which it is located, an identical label must be affixed on the interior face of the door to the transformer access area. [[Order of 9 September 1987, Article 1](#)]

8.9 Is the information in Question 8.8 also contained on card that is kept in a location that is separate from the equipment and is always accessible? [[Order of 9 September 1987, Article 1](#)] **<RECORD KEEPING>**

8.10 If the facility has equipment containing PCBs that is the subject of a declaration or equivalent and that is on the inventory listed according to the National Decontamination and Elimination Plan for PCBs, is the equipment labeled indelibly with the following: [[Environmental Code, Article R. 543-28](#)]

- “Appareil contenant des PCB (*Equipment containing PCBs*)”;
- “Concentration mesurée ou supposée (*Concentration of PCBs measured or estimated*) (in ppm by mass)”;
- Date de la mesure (*Date of the measurement* (if any)); and
- Date de la déclaration (*Date of the declaration*)?

Notes: The inventory under the National Plan will be updated by the Environment Ministry and the Minister of Energy (ADEME) on the basis of declarations submitted by the prefectures, and will be adapted as the universe of equipment containing PCBs changes in conformance with the regulations and the National Plan. [[Environmental Code, Article R. 543-27](#)]

8.11 If the facility has equipment on the inventory listed according to the National Decontamination and Elimination Plan for PCBs, that contained PCBs but has been decontaminated, is the equipment labeled indelibly as follows: [\[Environmental Code, Article R. 543-28\]](#)

- “Appareil décontaminé ayant contenu des PCB (Decontaminated equipment that formerly contained PCBs)”;
- “Le liquide contenant des PCB a été remplacé (*The liquid that contained PCBs has been replaced*):”
 - “Par (*By*) (name of the substitute)”;
 - “Le (*On*) (date of replacement)”;
 - “Par (*By*) (name of the enterprise)”;
- “Concentration en PCB (*Concentration of PCBs*):”
 - “De l'ancien liquide (*In the former liquid*) (ppm by weight)”;
 - “Du nouveau liquide (*In the new liquid*) (ppm by weight)”?

Notes: “Decontamination” is defined as any operation or combination of operations which allows equipment, objects, materials, earth surfaces or substances, containing liquids contaminated by PCBs, to be re-used or recycled or treated so as to lower the concentration of PCBs/PCTs. These operations can include substitution, i.e., all the operations whereby PCBs are replaced by appropriate liquids that do not contain these substances. For transformers, the objective of decontamination is to restore the level of the substances to less than 500 ppm in mass, and if possible, to less than 50 ppm in mass. The liquids used for replacement must not contain any of the listed substances and must present appreciably less risk to the environment and to human health. In addition, the replacement of the liquid must not create a risk with respect to the future disposal of the PCB substances. [\[Environmental Code, Article R. 543-32\(II\)\]](#)

8.12 If the facility produces or imports PCBs or PCTs, or PCB/PCT-containing equipment, is it able to provide (upon request by the competent authorities) the following information: [\[Order of 26 July 1975, Article 9 as amended by Order of 29 November 1984, Article 1\(c-d\)\]](#)

<RECORD KEEPING>

- A list of customers; and

- Statistics on the quantity of PCBs produced, placed on the market, put into operation or treated?

8.13 If the facility is planning to sell a building in which there is equipment that is assumed to contain more than 5 cubic decimeters of PCB, does the facility inform the purchaser of its existence, or if in doubt of the presence of PCBs, does it conduct an analysis of the PCB content of the equipment in order to provide accurate information to the purchaser? [[Environmental Code, Article R. 543-25](#)]

8.14 If the facility is a Classified Installation that plans a final shut-down, or if demolition of all or part of a building is planned, does the facility ensure that it eliminates/disposes of equipment containing PCBs? [[Environmental Code, Article R. 543-25](#)]

Notes: The elimination/disposal of PCBs must conform to the requirements of the [Environmental Code](#), Article R. 543-33, as described in Question 8.15 and Question 8.16. [[Environmental Code, Article R. 543-25](#)]

Disposal of PCBs

Notes: See Section 4.0 of this protocol for additional general details on waste and hazardous waste disposal and management.

8.15 If the facility generates waste PCB or waste containing PCBs, does it ensure that this waste is treated either by an authorized firm in France, or on premises which have obtained authorization in another European Community Member State? [[Environmental Code, Article R. 543-33](#)]

Notes: This question does not apply to condensers weighing less than 1 kg and containing less than 3.5% pentachlorobiphenyls by weight or more highly chlorinated biphenyls that have a chlorine content of less than 43% by weight. [[Environmental Code, Article R. 543-33](#)]

PCBs and equipment or articles containing PCBs which are not in use or for which the facility no longer has a use are classified as waste containing PCBs. This also applies to other objects and materials which are contaminated with PCBs at levels greater than 50 ppm. [[Environmental Code, Article R. 543-17](#)]

8.16 If the facility generates waste PCB or waste containing PCBs, does it ensure that such waste is not mixed with other wastes or any other substance before transport to an approved treatment facility? [[Environmental Code, Article R. 543-33](#)]

Notes: The treatment of waste containing PCBs is defined as any activity that destroys the molecules of the substances defined as PCBs/PCTs. [[Environmental Code, Article R. 543-32\(I\)](#)]

The [Environmental Code](#), Article R. 543-32 through Article R. 543-40, includes requirements for facilities that engage in the treatment/decontamination of PCB wastes. These requirements are beyond the scope of this protocol; however, if the facility retains specialized firms to conduct these activities, it may wish to verify that the company maintains the appropriate authorization to perform such treatment, and complies with the terms of the authorization.

Table 8-1**Compliance Schedule for Decontamination or Elimination of PCB Equipment**

Date of Manufacture	Date of Decontamination/Elimination
Before 1965 or with unknown date	31 June 2004
Before 1969	31 December 2004
Before 1974	31 December 2006
Before 1980	31 December 2008
All other equipment	31 December 2010

Source: Order of 26 February 2003, Annex, National Plan for Decontamination and Elimination of Equipment Containing PCBs and PCTs, Section IV.

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is provided for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter format does not contain the electronic links and other functionality contained in the MS Word version. The following instructions pertain to the fully linked Word version of the AQC.

Each question from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, electronic links back to the original protocol document are provided for quick access to this information when needed. To return to where you were in the AQC after following a link, use the back arrow located on the Audit Quick Check Toolbar.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an "X" into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X's to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

Additional audit questions can be added to the end of the AQC. Examples might include corporate requirements or best management practices. To add more questions, position the cursor outside of the right hand margin of the table, and hit "Enter." This will create a new row below. Continue to sequentially number the questions by putting your cursor in the first column and typing the desired number.

Please Note: Additional rows will be included in the sort function. It is important that you number the questions for the sort functions to work. Please consider the following sort rules when entering custom text.

Sorting Responses

The AQC sort feature is accessed from the IAPC menu item located on the far right on the Main MS Toolbar. Please note the following criteria to take full advantage of this feature.

You can change the column titles as you see fit, but the menus assume that:

- the first column contains the question number and question text;
- the second column is "Not Applicable" (N/A) entries;
- the third column is "Complies" entries; and
- the fourth column is "Does Not Comply" entries.

A question is considered "Complies" if there is any text ("X" or "YES", for instance) in the "Complies" column.

A question is considered "Incomplete" if columns 2 to 4 are all empty.

Only one column should contain a value for any given question.

Click the IAPC menu item and then select one of the following menu choices:

Sort by Question Number

- Sorts the section by question number

Sort with Incomplete first

- Sorts the section with Incomplete first, Does Not Comply next, Complies next, then N/A

Sort with Non-compliant first

- Sorts the section with Does Not Comply first, Complies next, N/A next, then Incomplete

Sort with Compliant first

- Sort the section with Complies items first, Does Not Comply next, N/A next, then Incomplete

Sort with Not Applicable last

- Sort the section with not-applicable items last (Complies first, Does Not Comply next, Incomplete next, then N/A)

For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click the IAPC menu item and choose "Sort with Non-compliant first". Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

Once the completed AQC is sorted, save or print a copy of the results. The AQC can then be re-sorted using a different option.

SECTION 8.0 PCBS**AUDIT QUICK CHECK**

SITE: _____ DATE: _____

ASSESSOR: _____

	Not Applicable	Complies	Does Not Comply
Q8.1 If the facility uses equipment, machinery or components, or stores products containing more than 30 liters of PCBs/PCTs, has a declaration been submitted to the prefect? [<i>Environmental Code, Articles L. 511-2 and R. 511-9, Annex</i>] I. Use of PCB-Containing Equipment Comments:			
Q8.2 If the facility uses components or machinery/equipment containing PCBs/PCTs in the following quantities (as a total quantity within the facility), has it submitted the following documentation or application to the prefect: [<i>Environmental Code, Articles L. 511-2 and R. 511-9, Annex</i>] – More than 1,000 liters of PCBs - Authorization; and – More than 100 liters to less than or equal to 1,000 liters - Declaration? I. Use of PCB-Containing Equipment Comments:			

		Not Applicable	Complies	Does Not Comply
Q8.3 If the facility repairs, recovers, decontaminates, or dismantles components, machinery or equipment containing PCBs/PCTs, (outside of the area where these components normally operate, either on-site or off-site), containing quantities greater than 50 liters, has it submitted an application for authorization/permit to the prefect? [<i>Environmental Code, Articles L. 511-2 and R. 511-9, Annex</i>] I. Use of PCB-Containing Equipment Comments:				
Q8.4 If the facility has any devices with over 5 cubic decimeters capacity containing PCBs with more than 50 ppm, has it filed a holding declaration with the prefect's office as specified in the form provided in "Annexe I" of the <i>Order of 13 February 2001</i>? [<i>Order of 13 February 2001, Article 1</i>] I. Use of PCB-Containing Equipment Comments:				
Q8.5 If the facility has any devices with over 5 cubic decimeters capacity containing dielectric coolant, hydraulic or insulating fluids which are contaminated or likely to be contaminated with PCBs at a concentration greater than 50 ppm, has it filed a declaration with the prefect's office that contains the following information: [<i>Order of 13 February 2001, Article 2</i>] and [<i>Environmental Code, Article R. 543-26</i>] – Name and address of the facility; – Location and description of the equipment; – Quantity of PCBs contained in the equipment; – Date and type of treatment or substitution made or planned; and – Date of the declaration? See protocol for note. I. Use of PCB-Containing Equipment Comments:				

		Not Applicable	Complies	Does Not Comply
Q8.6	If a declaration or authorization/permit application was submitted and a prefectural authorization was subsequently issued to the facility, is the facility in compliance with the general provisions provided by the authorization? [<i>Environmental Code, Article R. 512-28</i>] I. Use of PCB-Containing Equipment Comments:			
Q8.7	If the facility purchases, sells, disposes of, leases or uses equipment or items containing PCBs or the fluids themselves, does it ensure that only the following activities are conducted: [<i>Environmental Code, Article R. 543-20 and Article R. 543-21</i>] – The leasing or using of equipment or articles containing PCBs, designated below, on the condition that they were in service before 4 February 1987: – Closed circuit electrical appliances, such as transformers, resistors and inductors; – Condensers with a total weight of 1 kg or more; – Condensers with a total weight of less than 1 kg, provided that the PCBs contained in them have an average chlorine content of less than 43% by weight and contain less than 3.5% by weight of pentachlorinated biphenyls or more highly chlorinated biphenyls; – Heat exchangers/cooling systems, except in installations intended for the treatment of foods for human or animal consumption or the preparation of pharmaceutical or veterinary products; and – Hydraulic systems for underground equipment in mines; – Leasing or use of equipment containing (dichlorophenyl) (dichlorotolyl) methane, mixture of isomers whose CAS registration number is 76253-60-6, provided that they were brought into service before 18 June 1994; and – Use of PCBs in installations devoted to technological research? See protocol for notes. I. Use of PCB-Containing Equipment			

	Not Applicable	Complies	Does Not Comply
Comments:			
Q8.8 Does the facility ensure that all equipment listed in Question 8.7 is labeled with an indelible marking that is at least 50 x 75 mm with the following warning: [<i>Order of 9 September 1987, Article 1</i>] – “Cet appareil contient des PCB qui pourraient contaminer l'environnement et dont l'élimination est réglementée” (<i>This apparatus contains PCB which could contaminate the environment and its disposal is regulated</i>)? See protocol for notes. I. Use of PCB-Containing Equipment Comments:			
Q8.9 Is the information in Question 8.8 also contained on card that is kept in a location that is separate from the equipment and is always accessible? [<i>Order of 9 September 1987, Article 1</i>] <RECORD KEEPING> I. Use of PCB-Containing Equipment Comments:			

		Not Applicable	Complies	Does Not Comply
Q8.10	If the facility has equipment containing PCBs that is the subject of a declaration or equivalent and that is on the inventory listed according to the National Decontamination and Elimination Plan for PCBs, is the equipment labeled indelibly with the following: [<i>Environmental Code, Article R. 543-28</i>] – “Appareil contenant des PCB (<i>Equipment containing PCBs</i>)”; – “Concentration mesurée ou supposée (<i>Concentration of PCBs measured or estimated</i>) (in ppm by mass)”; – Date de la mesure (<i>Date of the measurement</i> (if any)); and – Date de la déclaration (<i>Date of the declaration</i>)? See protocol for notes. I. Use of PCB-Containing Equipment Comments:			
Q8.11	If the facility has equipment on the inventory listed according to the National Decontamination and Elimination Plan for PCBs, that contained PCBs but has been decontaminated, is the equipment labeled indelibly as follows: [<i>Environmental Code, Article R. 543-28</i>] – “Appareil décontaminé ayant contenu des PCB (<i>Decontaminated equipment that formerly contained PCBs</i>)”; – “Le liquide contenant des PCB a été remplacé (<i>The liquid that contained PCBs has been replaced</i>):” – “Par (<i>By</i>) (name of the substitute)”; – “Le (<i>On</i>) (date of replacement)”; – “Par (<i>By</i>) (name of the enterprise)”; – “Concentration en PCB (<i>Concentration of PCBs</i>):” – “De l'ancien liquide (<i>In the former liquid</i>) (ppm by weight)”; – “Du nouveau liquide (<i>In the new liquid</i>) (ppm by weight)”? See protocol for notes. I. Use of PCB-Containing Equipment			

		Not Applicable	Complies	Does Not Comply
	Comments:			
Q8.12	If the facility produces or imports PCBs or PCTs, or PCB/PCT-containing equipment, is it able to provide (upon request by the competent authorities) the following information: [<i>Order of 26 July 1975, Article 9 as amended by Order of 29 November 1984, Article 1(c-d)</i>] <RECORD KEEPING> – A list of customers; and – Statistics on the quantity of PCBs produced, placed on the market, put into operation or treated? I. Use of PCB-Containing Equipment Comments:			
Q8.13	If the facility is planning to sell a building in which there is equipment that is assumed to contain more than 5 cubic decimeters of PCB, does the facility inform the purchaser of its existence, or if in doubt of the presence of PCBs, does it conduct an analysis of the PCB content of the equipment in order to provide accurate information to the purchaser? [<i>Environmental Code, Article R. 543-25</i>] I. Use of PCB-Containing Equipment Comments:			

		Not Applicable	Complies	Does Not Comply
Q8.14 If the facility is a Classified Installation that plans a final shut-down, or if demolition of all or part of a building is planned, does the facility ensure that it eliminates/disposes of equipment containing PCBs? [<i>Environmental Code, Article R. 543-25</i>] See protocol for notes. I. Use of PCB-Containing Equipment Comments:				
Q8.15 If the facility generates waste PCB or waste containing PCBs, does it ensure that this waste is treated either by an authorized firm in France, or on premises which have obtained authorization in another European Community Member State? [<i>Environmental Code, Article R. 543-33</i>] See protocol for notes. II. Disposal of PCBs Comments:				
Q8.16 If the facility generates waste PCB or waste containing PCBs, does it ensure that such waste is not mixed with other wastes or any other substance before transport to an approved treatment facility? [<i>Environmental Code, Article R. 543-33</i>] See protocol for notes. II. Disposal of PCBs Comments:				

9.0 ASBESTOS

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

- I. General Risk Prevention Measures [9-5](#)
- II. Supplemental Prevention Measures for Risk Classes 2 and 3 [9-10](#)
- III. Asbestos Inventory and Activities Requiring Certification [9-14](#)
- IV. Asbestos Uses and Prohibitions [9-17](#)
- V. Removal of Asbestos by Non-Professional Companies [9-19](#)

Tables or Appendices referenced in the protocol are located at the end of this section, along with a link to our audit scorecard, entitled [Audit Quick Check](#). This protocol applies to facilities located throughout The Netherlands.

National Netherlands legislation is consolidated and available through the government Overheid website at: <http://wetten.overheid.nl/zoeken/> (last accessed in January 2010). A legislation search may be performed by pasting the Dutch title into the first field under “Zoek op woord of zinsdeel,” (to the right of “In de titel”) and then clicking on the black “Zoeken” button in the bottom right-hand corner. If the document is still in force, it will appear on a list with hyperlinks to any listed documents. Earlier versions of legislation may be viewed by entering the relevant date in the field, “Zoek op datum.”

A. KEY LEGISLATION AND REGULATIONS

Key legislation and regulations covered in this protocol are noted as follows:

National:

- **Environmental Management Act, published June 13, 1979 (Stb. 442), as amended through December 29, 2009 (Stb. 2009, 609) (Wet milieubeheer), June 13, 1979 as amended through December 29, 2009.** This Act, herein cited as the “EMA”, is the framework legislation for environmental management in the Netherlands, including integrated environmental licensing and waste management.
- **Occupational Conditions Decree, published January 15, 1997 (Stb. 1997, 60), as amended through October 1, 2009 (Stb. 2009, 395) (Arbeidsomstandigheden-besluit), January 15, 1997 as amended through October 1, 2009.** This Decree consolidates much of the pre-existing occupational health and safety legislation into a single decree. It addresses a wide range of topics and requirements; only those pertaining to asbestos are discussed in this protocol section.
- **Ministerial Decision on Labor Legislation, published March 12, 1997 (Stcrt. Suppl. 1997, 63), as amended through June 30, 2009 (Stb. 2009, 266) (Arbeidsomstandighedenregeling), March 12, 1997 as amended through June 30, 2009.** This Ministerial Decision expands on the requirements of the *Occupational Conditions Act (Arbeidsomstandighedenwet)* and the Occupational Conditions Decree (Arbeidsomstandigheden-besluit). It specifies approved sampling methods and equipment.
- **Decree on Asbestos Products, published December 17, 2004 (Stb. 2005, 6), as amended through May 15, 2008 (Stb. 2008, 160) (Productenbesluit asbest), December 17, 2004 as amended through May 15, 2008.** This Decree forbids the manufacture, import, possession, and use of products containing asbestos.
- **Regulation on Asbestos Products, published February 16, 2005 (Stb. 2005, 40) (Productenregeling asbest), February 16, 2005.** This Regulation contains detailed information on the required methods for determining the characteristics of asbestos. It is included in this section for reference only.
- **Asbestos Removal Decree 2005 published February 20, 2006 (Stb. 87), as amended through August 19, 2008 (Stb. 2008, 326) (Asbestverwijderingsbesluit 2005), February 20, 2006 as amended through August 19, 2008.** This Decree establishes requirements for the removal of asbestos in buildings.

European Union:

None.

This protocol section updates information contained in the prior version (2008). Specific additions, deletions and other changes made relative to the earlier version of the protocol are summarized in Appendix 9-A.

B. TOPICS AND QUESTIONS

Notes: This section integrates most of the requirements related to asbestos, including those related to air, water, waste, and industrial hygiene, as appropriate and applicable. Training-related requirements are addressed in Section 18.0 of this protocol.

The Occupational Conditions Decree (Arbeidsomstandigheden-besluit) defines the following terms which apply to this section: [Occupational Conditions Decree (Arbeidsomstandigheden-besluit), Articles 4.37, 4.44, 4.46, 4.48] and [Decree on Asbestos Products (Productenbesluit asbest), Article 1(c-d)]

- “Amphibole asbestos” includes actinolite, amosite, anthophyllite and tremolite;
- “Asbestos” is defined as substances which contain one or more of following fibrous silicates:
 - Actinolite (CAS number 77536-66-4);
 - Amosite (CAS number 12172-73-5);
 - Anthophyllite (CAS number 77536-67-5);
 - Chrysotile (CAS number 12001-29-5);
 - Tremolite (CAS number 77536-68-6); and
 - Crocidolite (CAS number 12001-28-4);
- “Asbestos-containing products” are those products which contain one or more fibrous silicates defined as “asbestos” above;
- “Asbestos threshold limit” in air is 0.01 fiber/cm³ over an 8-hour reference period;
- “Class 1 risk” is when the concentration of asbestos to which employees are occupationally exposed is less than or equal to the “asbestos threshold limit” (defined above);
- “Class 2 risk” is when the concentration of asbestos to which employees are occupationally exposed is greater than the “asbestos threshold limit,” but less than or equal to 1 fiber/cm³ over an 8-hour reference period;
- “Class 3 risk” is when the concentration of asbestos to which employees are occupationally exposed is greater than 1 fiber/cm³ over an 8-hour reference period;

- “Fiber” is a particle which is longer than 5 micrometers, and is less than 3 micrometers wide with a length/width proportion of greater than 3/1;
- “Object” refers to a construction, installation, apparatus or means of transport that is not part of a construction work; and
- “Serpentine asbestos” (“serpentijnasbest”) includes chrysotile.

Facilities that work with asbestos or asbestos-containing products with a concentration greater than 100 mg/kg of dry substance to which no asbestos has been deliberately added and with a concentration ratio of serpentine asbestos that is ten times the concentration of amphibole asbestos, must comply with the requirements set forth in this protocol section. [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.37c](#)] and [[Decree on Asbestos Products \(Productenbesluit asbest\), Article 2b](#)]

I. General Risk Prevention Measures

Notes: Unless otherwise noted, the requirements in this subsection apply to any facility that is classified as having a Class 1, Class 2 or Class 3 risk (defined at the beginning of this section) as a result of its risk assessment. See Section 10.0 of this protocol for details on general risk assessments for health and safety in facilities. [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Articles 4.44](#)]

- 9.1** If the facility holds an Environmental Management Act (EMA) license that contains provisions that discuss the use and control of asbestos, does the facility comply with these provisions? [[EMA, Article 8.11](#)]
- 9.2** Does the facility ensure that the concentration of asbestos in air is at the lowest level possible below the asbestos threshold limit by implementing preventative measures, including the following: [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Articles 4.45\(1-2\) and 4.46](#)]
- Working methods are arranged so that no asbestos is produced, or if that is not technically possible, no asbestos is released into the air;
 - Buildings, installations and plant which are used in the application or treatment of asbestos or of asbestos-containing products are regularly and effectively cleaned and maintained;
 - Asbestos, asbestos-containing products and/or products from which asbestos is released are suitably packaged and transported in enclosed packaging;

- Any waste products generated as a result of the application or treatment of asbestos or asbestos-containing products are (as soon as possible) collected and removed in suitably enclosed packaging, affixed with a label that clearly and legibly indicates that the contents contain asbestos?

9.3 If the facility exhibits a Class 2 or Class 3 risk, are washrooms and showers available to employees? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Articles 4.20\(4\) and 4.45\(3\)](#)]

9.4 If personnel perform work where the danger of exposure to asbestos exists, are these persons provided with information on working with asbestos, including the following: [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Articles 4.45a and 4.51](#)]

- The health hazards associated with such work;
- Requirements for monitoring concentrations of asbestos in the air and the asbestos threshold limits values;
- Information on the potential health dangers from exposure to asbestos;
- Protective measures with respect to asbestos-contaminated work clothing;
- Measures to reduce exposure to asbestos to as low a level as possible; and
- The correct use of Personal Protective Equipment (PPE)?

9.5 Are air samples collected to ensure that employees are not exposed to asbestos levels that exceed the asbestos threshold limit? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47\(1\)](#)]

Notes: The monitoring design (e.g., frequency and locations) must be tailored to the results of the risk assessment (see Section 10.0 of this protocol for these requirements) and accordance with any ministerial regulations that have been established with regard to methodology. [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47\(1-3\)](#)]

The Worker's Council (or if none exists, employee representatives) must be given the opportunity to provide an opinion regarding the design of the monitoring program. [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47\(4\)](#)]

9.6 Does the air monitoring referenced in Question [9.5](#) meet the following requirements: [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47\(5-9\)](#)]

- Samples are representative of the exposure of individual employees to asbestos;
- Sampling is conducted in a manner that allows for weighting to be determined or calculated for an employee asbestos exposure time that is representative of an 8-hour reference period;
- Sampling is conducted by a person who has the required expertise;
- Sample analysis is conducted in a laboratory that is adequately equipped and has experience with the required analytical/identification techniques; and
- The members of the Worker's Council (or if none exists, employee representatives) have access to these analytical results and explanations with regard to their significance?

Notes: Information on the expertise required specifically for asbestos sampling is not included in the *Occupational Conditions Decree (Arbeidsomstandighedenbesluit)*. However, general details on the certification of experts are included in Articles 20 through 23 of the *Occupational Conditions Act (Arbeidsomstandighedenwet)*, Articles 1.5a through 1.5e, 2.14 and 2.14a of the *Occupational Conditions Decree (Arbeidsomstandighedenbesluit)* and Articles 1.2 through 1.8, 2.13 through 2.17, 6.1 and 6.2 of the [Ministerial Decision on Labor Legislation \(Arbeidsomstandighedenregeling\)](#). This legislation is available for viewing and download at the Netherlands government Overheid website indicated at the beginning of this protocol section.

9.7 Does the facility ensure that samples are taken from the individual breathing zone as defined in the note below, using approved monitoring equipment and methods? [[Ministerial Decision on Labor Legislation \(Arbeidsomstandighedenregeling\), Article 4.22](#)]

Notes: The individual breathing zone is defined as the area within the half sphere surrounding the face of the individual and including a radius of 300 mm measured from the midline between the ears. [[Ministerial Decision on Labor Legislation \(Arbeidsomstandighedenregeling\), Article 4.22](#)]

Articles 4.23 - 4.26 of the [Ministerial Decision on Labor Legislation](#) (available the Overheid website indicated at the beginning of this protocol section) contain specifics on approved equipment and sampling methodology including:

- Filter and pump types;
- Fiber identification methods and equipment; and
- Calculations for determining fiber counts.

9.8 If the asbestos threshold limit is exceeded, does the facility implement appropriate protective response measures as soon as possible to bring the level of asbestos in air to below this limit? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Articles 4.47a \(1\) and 4.46](#)]

9.9 If the asbestos threshold limit is exceeded, does the facility inform the Worker's Council (or if none exists, employee representatives) as soon as possible of the exceedance, its cause, and the measures to be taken to reduce exposure to a safe level? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47a \(2\)](#)]

Notes: The Worker's Council (or employee representatives) must also be given the opportunity to express an opinion about the response measures to be taken, unless there are urgent reasons to bypass this step. In such a case, the Council and/or representatives are informed of the measures taken afterwards. [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47a\(2\)](#)]

9.10 If the response measures do not reduce the exposure to asbestos to below the asbestos threshold limit, does the facility ensure that it provides the workers with effective personal protective equipment (PPE) to reduce their exposure to asbestos before continuing work? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47a \(3\)](#)]

9.11 If the exposure to asbestos cannot be reduced except through the use of personal protective equipment, does the use of PPE meet the following requirements: [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47a \(4-6\)](#)]

- Is limited to only those periods when strictly necessary; and
- Adequate periods of rest are provided, with their frequency and duration determined by the level of exertion and the climatic conditions where the work is being conducted?

Notes: The rest periods are determined by the Worker's Council (or employee representatives) and if necessary, in consultation with interested employees. [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47a \(7\)](#)]

- 9.12** Following the implementation of effective measures to reduce the concentration levels of asbestos, does the facility undertake additional asbestos air monitoring to determine if its risk classification (Class 1, 2 or 3, defined above) will change? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47a \(8\)](#)]
- 9.13** Prior to beginning any new activities, does the facility ensure that a final assessment is conducted of any areas where work with asbestos has been conducted? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47b \(1\)](#)]
- 9.14** Does the assessment in Question [9.13](#) include a visual inspection that confirms that asbestos is no longer visually perceptible? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47b \(2\)](#)]

Notes: The remaining questions in this subsection apply to work projects that involve asbestos or asbestos-containing products, including the following types of work (which are exempt from asbestos inventory requirements - see Question [9.31](#)): [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47c \(4\) and 4.54b](#)]

- Partial or total removal of asbestos-containing cement, water or gas pipelines, pipe sleeves or sewers) or parts thereof, insofar as they are part of an underground public gas, water and sewer network;
 - Partial or total removal of asbestos-containing brakes and friction-materials;
 - Partial or total removal of asbestos-containing flooring in heating installations;
 - Total removal of asbestos-containing heating installations;
 - Partial or total removal of asbestos-containing glazing/caulk that has been incorporated into the construction of a greenhouse;
 - Partial or total removal of asbestos-containing gaskets from combustion engines;
 - Partial or total removal of asbestos-containing gaskets or parts thereof or process heaters with a rated capacity less than 2250 kilowatts; and
 - Partial or total removal of asbestos or asbestos-containing products from roads as stipulated in the *Decree on Asbestos and Roadways (Besluit asbestwegen Wms)*.
- 9.15** Prior to beginning any work projects that involve asbestos or asbestos-containing products, does the facility ensure that a written notification is provided to the Labor Inspectorate

(“toezichthouder”) that includes at least the following information: [Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47c \(1\)](#)

- The location where the proposed work will be performed;
- The types and quantities of asbestos-containing products;
- A description of the asbestos work or work with asbestos-containing products, including the working methods and the risk classification (Class 1, 2 or 3) based on the (predicted) concentration of asbestos dust in the air;
- The number of employees involved;
- The date and time the work is scheduled to begin, as well as its duration; and
- The measures to be taken to prevent exposure of workers to asbestos?

9.16 If a change in notified working conditions could lead to a significant increase in worker exposure to asbestos dust or asbestos-containing products, does the facility ensure that a new/revised notification is provided to the Labor Inspectorate? [Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47c \(2\)](#)

9.17 Are the notifications in Question [9.15](#) and Question [9.16](#) made available to the Worker's Council and/or employee representatives? [Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.47c \(3\)](#)

II. Supplemental Prevention Measures for Risk Classes 2 and 3

Notes: The requirements in this subsection apply to Class 2 and Class 3 risk facilities; these requirements are in addition to those in the Subsection entitled, “General Risk Prevention Measures.” [Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.48](#)

9.18 If the risk assessment indicates that the prevention measures indicated in the Subsection entitled, “General Risk Prevention Measures” will not be sufficient to maintain the asbestos levels in air below the asbestos threshold limit, does the facility implement the following additional precautionary measures: [Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.48a \(1-2\)](#)

- Appropriate respiratory protection and other personal protective equipment (PPE) is provided and its use is made mandatory;

- A warning sign is posted in the work area, indicating that exceedances of the asbestos threshold limit are expected; and

Notes: The sign must meet the requirements in the Subsection entitled, "Safety Signs, Signals and Alarms" in Section 10.0 of this protocol.

- The spread of dust from asbestos or asbestos-containing materials to areas outside the premises where the work is conducted is prevented?

9.19 Is the Worker's Council (or if none exists, are employee representatives) given the opportunity to provide an opinion regarding any additional preventions measures? [Occupational Conditions Decree (Arbeidsomstandigheden-besluit), Article 4.48a(3)]

9.20 Prior to beginning any work (other than the asbestos work), are any asbestos and asbestos-containing products that are present disposed of, unless such disposal represents a greater danger to the safety and health of employees? [Occupational Conditions Decree (Arbeidsomstandigheden-besluit), Article 4.48a(4)]

9.21 If the facility has asbestos work performed that requires asbestos certification as noted below, has a written work plan been established prior to beginning the asbestos work, that addresses effective measures to protect the health of employees involved in performing such work? [Occupational Conditions Decree (Arbeidsomstandigheden-besluit), Articles 4.50 and 4.54d(1)]

Notes: If the concentration of asbestos substance denotes a Class 2 or Class 3 risk, the following activities must be performed by a company that is certified to remove asbestos: [Occupational Conditions Decree (Arbeidsomstandigheden-besluit), Articles 4.54a(1a-b) and 4.54d(1)]

- Decontamination/clean-up after one of the following operations has been carried out: [Occupational Conditions Decree (Arbeidsomstandigheden-besluit), Article 4.54a(1a-b)]
 - Partial or total demolition of a construction/structure (with exception of earthworks) or an object that contains asbestos or asbestos-containing products; and
 - Removal of asbestos or asbestos-containing products from a construction/structure or object (as indicated above).

The certified company that performs the operations indicated above must ensure that the work plan contains verification measures for the project's final assessment (see Question 9.25 - Article 4.51a) to ensure that no danger of asbestos exposure remains. [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.50\(3\)](#)]

See Article 4.50(4) of the [Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\)](#) for the complete details on work plan requirements. This Decree may be viewed and downloaded from the Overheid website indicated at the beginning of this protocol section.

9.22 If an inventory report is required as indicated in Question 9.31, are the results of the inventory report incorporated into the work plan? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.50\(2\)](#)]

9.23 If the facility has an asbestos work plan as indicated above, are the following requirements met: [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.50\(5-6\)](#)]

- The activities in the work plan are conducted in accordance with that plan; and
- A copy of the work plan is kept available at the work site and provided to the supervisory authority, upon request? **<RECORD KEEPING>**

9.24 Are the following provisions met with regard to the work clothes and PPE used during asbestos work: [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.51\(1-3\)](#)]

- Work clothes or protective clothes remain (and are cleaned) at the facility unless they are to be laundered in external establishments which are specially equipped for this sort of work;
- Asbestos-contaminated clothing is transported to such external laundries in closed containers;
- PPE is checked and cleaned after every use and stored in separate designated storage areas; and
- Faulty PPE is never used?

9.25 After the completion and decontamination of an asbestos-work site and prior to beginning other work, is a final assessment of the workplace conducted that includes the following: [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.51a \(1-4\)](#)]

- Samples are collected by a qualified person and analyzed in an adequately equipped and qualified laboratory;
- A visual inspection is conducted, followed by collection of a final sample to verify that the concentration of asbestos dust in the air is less than 0.01 fiber/cm³, based on a reference period of two hours;
- If the work site was outdoors, a visual inspection is conducted after cleaning/decontamination, by a company that is adequately equipped for such an inspection, to verify that the presence of asbestos is no longer visually observed; and
- If an outdoor work site involved asbestos-containing soil, a visual inspection is conducted by a company that is adequately equipped for such an inspection, to verify that the concentration of asbestos is not more than 100 mg/kg of dry material?

9.26 If the facility requires that personnel work with asbestos in a Class 2 or 3 risk area, are medical exams provided? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.52](#)]

Notes: Exams must include a specific examination of the lungs and be provided at least once every three years. If the results of the examination indicate any health effects, effective measures must be taken to prevent any further deterioration. Furthermore, the labor service is permitted to review the examination results. [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.52](#)]

9.27 For each medical exam that is conducted, as referenced in Question [9.26](#), are records that include information on the nature and duration of exposure entered into a register? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.53\(1\)](#)]
<RECORD KEEPING>

Notes: The Decree does not specify a retention time for such records.

9.28 Does the facility provide access to statistical information relative to employee exposure to the Workers Counsel or to employee representatives, if there is no Council? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.53 and \(4\)](#)]

Notes: The identity of the employees must remain anonymous. [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.53 and \(4\)](#)]

9.29 Are employees notified of their examination results and the exposure information that has been recorded? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.53\(3\)](#)]

9.30 If the facility has a Class 3 risk, does the final workplace assessment described in the first two bullets of Question [9.25](#) include an equivalent assessment of areas that are adjacent to the completed asbestos work project? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.54](#)]

Notes: This requirement does not apply to Class 1 or Class 2 risk facilities. [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.53a](#)]

III. Asbestos Inventory and Activities Requiring Certification

9.31 Does the facility have a certified company conduct an asbestos inventory (if not certified itself) as a part of its risk assessment if it conducts any of the following activities: [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.54a \(1 and 4\)](#)]

- Partial or total demolition of a construction/structure (with the exception of earthworks) or an object that contains asbestos or asbestos-containing products;
- Removal of asbestos or asbestos-containing products from a construction/structure or object (as indicated above); and/or
- Clean-up activities to remove asbestos or asbestos-containing products which were released due to an accident?

Notes: The risk class (i.e., Class 1, 2 or 3) for such work is determined by the certified company on the basis of the asbestos inventory results within the framework of the overall evaluation of health and safety (see the Subsection entitled, “Evaluation of Health and Safety Risks” in Section 10.0 of this protocol for additional details); the facility’s classification is included in an inventory report. [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.54a \(2 and 3\)](#)].

This inventory requirement does not apply to activities that involve the following: [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.54b](#)]

- Operations which are carried out in or on such constructions/structures or objects which were manufactured on or after January 1, 1994;

- Partial or total removal of asbestos-containing cement, water or gas pipelines, pipe sleeves or sewers or parts thereof, insofar as they are part of an underground public gas, water or sewer network;
- Partial or total removal of asbestos-containing brakes and friction-materials;
- Partial or total removal of asbestos-containing flooring in heating installations; Total removal of asbestos-containing heating installations;
- Partial or total removal of asbestos-containing glazing/caulk that has been incorporated into the construction of a greenhouse;
- Partial or total removal of asbestos-containing gaskets from combustion engines;
- Partial or total removal of asbestos-containing gaskets or parts thereof or process heaters with a rated capacity less than 2250 kilowatts; and
- Partial or total removal of asbestos or asbestos-containing products from roads as stipulated in the *Decree on Asbestos and Roadways (Besluit asbestwegen Wms)*.

Although beyond the scope of this protocol, the auditor may wish to consult the *Decree on Asbestos and Roadways (Besluit asbestwegen Wms)* for facilities that build roads or other paved pathways. The Decree establishes restrictions and prohibitions on the use of asbestos in roads and pavement. See the Overheid website indicated at the beginning of this protocol section for access to this Decree.

- 9.32** If the facility engages a company to remove asbestos as indicated above, does the facility provide the company with a copy of the inventory report? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Article 4.54a\(5\)](#)] and [[Asbestos Removal Decree 2005 \(Asbestverwijderingsbesluit 2005\), Article 5](#)]
- 9.33** Are certificates (or their copies) that verify/attest to the completion of an asbestos inventory and the qualification of the supervising asbestos expert (see Question [9.35](#)) available at the work site and to the supervising authority upon request? [[Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\), Articles 4.54a\(6\) and 4.54d\(9\)](#)] **<RECORD KEEPING>**

9.34 If the facility is a Class 2 or Class 3 risk facility, does it have a certificate of authorization for asbestos removal, issued by the Minister of Housing, Spatial Development and Environment or a certifying institution if it performs any of the following activities: [Occupational Conditions Decree (Arbeidsomstandigheden-besluit), 4.54d(1)] and [Asbestos Removal Decree 2005 (Asbestverwijderingsbesluit 2005), Article 6]

- Partially or completely demolishes or breaks down buildings or constructions that contain asbestos or asbestos-containing products;
- Removes asbestos or asbestos-containing products from buildings or constructions;
- Conducts clean-up activities at the workplace, after the activities above are performed; and/or
- Conducts clean-up activities to remove asbestos or asbestos-containing products which were released due to an accident?

9.35 Does the facility ensure that individuals carrying out Class 2 or Class 3 risk activities are certified as asbestos removal experts by the Minister of Social Affairs and Employment or a certifying institution? [Occupational Conditions Decree (Arbeidsomstandigheden-besluit), Article 4.54d (5-7)] and [Ministerial Decision on Labor Legislation (Arbeidsomstandighedenregeling), Article 4.27]

Notes: See the notes to Question [9.6](#) for information on the legislative framework for certification.

9.36 If the facility's activities correspond with the activities described in the note below and involve soil that has been contaminated with asbestos, does it ensure that these activities are supervised by a person who has an industrial hygiene or safety management certificate? [Occupational Conditions Decree (Arbeidsomstandigheden-besluit), Article 4.54d (8)] and [Decree on Asbestos Products (Productenbesluit asbest), Article 5 (e-f)]

Notes: Activities that require certified supervision include: [Decree on Asbestos Products (Productenbesluit asbest), Article 5(e-f)]

- Digging up, storing, having available during transport or providing asbestos or asbestos-containing waste products to another party in cases where asbestos was not deliberately added, unless it has been stipulated differently in a legal regulation; and

- Cleaning of waste products to which no asbestos has been deliberately added and which, after clean-up, have a concentration of serpentine asbestos (“serpentijnasbest”), that when multiplied by ten times the concentration of amphibole asbestos, (in accordance with the methods indicated in the [*Regulation on Asbestos Products \(Productenregeling asbest\)*](#)), is not greater than 100 mg/kg dry substance, unless it has been stipulated differently in another regulation.

IV. Asbestos Uses and Prohibitions

- 9.37** Does the facility ensure that it does not manufacture, import, have in stock, provide, use or process asbestos or asbestos-containing products? [*Decree on Asbestos Products \(Productenbesluit asbest\), Article 4*](#)

Notes: Asbestos (as defined in this Decree) refers to the following forms: [*Decree on Asbestos Products \(Productenbesluit asbest\), Article 1*](#)

- Actinolite (CAS number 77536-66-4);
- Amosite (CAS number 12172-73-5);
- Anthophyllite (CAS number 77536-67-5);
- Chrysotile (CAS number 12001-29-5); and
- Tremolite (CAS number 77536-68-6).

Serpentine asbestos (“serpentijnasbest”) includes chrysotile. Amphibole asbestos includes actinolite, amosite, anthophyllite and tremolite. [*Decree on Asbestos Products \(Productenbesluit asbest\), Article 1*](#)

Exceptions to this question apply to the following: [*Decree on Asbestos Products \(Productenbesluit asbest\), Article 5\(a-g\)*](#)

- Having available or making available to another party, a product which has been brought legitimately onto the market in which asbestos or an asbestos-containing (asbesthoudend) product has been legitimately included and has already been installed or in facility use, as of December 17, 2004 (the enforcement date of the [*Decree on Asbestos Products \(Productenbesluit asbest\)*](#)) unless it has been differently stipulated by another regulation;

- Use of asbestos as part of a laboratory investigation or collection of material samples, in order to determine the composition of asbestos and the asbestos composition of asbestos-containing products;
- Conducting borings (“aanboringen”), repair and maintenance activities;
- Cleaning clothing and tools used during activities where asbestos was present or was released;
- Digging up, storing, having available during transport or providing asbestos or asbestos-containing waste products to another party in cases where asbestos was not deliberately added, unless it has been stipulated differently in a legal regulation;
- Cleaning of waste products to which no asbestos has been deliberately added and which, after clean-up, have a concentration of serpentine asbestos (“serpentijnasbest”), that when multiplied by ten times the concentration of amphibole asbestos, (in accordance with the methods indicated in the [*Regulation on Asbestos Products \(Productenregeling asbest\)*](#)), is not greater than 100 mg/kg dry substance, unless it has been stipulated differently in another regulation; and
- Operations related to the removal/clean-up of asbestos or an asbestos-containing (asbesthoudend) product as the result of a release incident.

Regardless of the exceptions listed in the note above, the facility must ensure a general duty-of-care to the environment whenever performing these activities by implementing preventative measures to protect people and the environment from the risks associated with asbestos. [[*Decree on Asbestos Products \(Productenbesluit asbest\)*, Article 6](#)]

Additional exceptions to this question apply to certain military activities and the following: [[*Decree on Asbestos Products \(Productenbesluit asbest\)*, Articles 2 and 3](#)]

- Asbestos or asbestos-containing products that are removed in establishments considered by the [*EMA*](#), Article 1.1 (4), to have a potential negative effect on the environment;
- A product to which no asbestos has been added deliberately and whose concentration of serpentine asbestos (“serpentijnasbest”), when multiplied by ten times the concentration of amphibole asbestos, (in accordance with the methods indicated in the [*Regulation on Asbestos Products \(Productenregeling asbest\)*](#)) is

not greater than 100 mg/kg dry substance, unless it has been stipulated differently in another regulation;

- Operations regulated under the [Asbestos Removal Decree 2005 \(Asbestverwijderingsbesluit 2005\)](#) (addressed in this protocol section);
- Complete or partial demolition of construction works, buildings, apparatus, installations and those in which asbestos or asbestos-containing products have been included, in accordance with the [Occupational Conditions Decree \(Arbeidsomstandigheden-besluit\)](#); and
- The moving of contaminated soil in cases of serious pollution (as defined in Article 1 of the *Soil Protection Act*), unless asbestos has been deliberately added to the soil.

9.38 If the facility has asbestos-containing products in stock (under an exception noted above) to provide to another person or for its own use, are such products marked as indicated in the Appendix to the [Decree on Asbestos Products \(Productenbesluit asbest\)](#)? [[Decree on Asbestos Products \(Productenbesluit asbest\), Article 7\(1\)](#)]

Notes: This question does not apply to buildings, constructions, installations or vehicles. [[Decree on Asbestos Products \(Productenbesluit asbest\), Article 7\(2\)](#)]

V. Removal of Asbestos by Non-Professional Companies

Notes: The [Asbestos Removal Decree 2005 \(Asbestverwijderingsbesluit 2005\)](#) focuses primarily on the removal of asbestos by companies that are non-professional asbestos removal companies or are construction companies that may conduct asbestos removal activities. The removal of Class 2 and Class 3 asbestos requires the use of a company with a certificate of authorization for asbestos removal (see Question 9.34). [[Asbestos Removal Decree 2005 \(Asbestverwijderingsbesluit 2005\), Article 6](#)] Therefore the requirements in this subsection, which basically parallel those previously presented in this protocol section, are interpreted as applicable to Class 1 removal activities.

“Non-professional asbestos removal companies” are not specifically defined in the [Asbestos Removal Decree 2005 \(Asbestverwijderingsbesluit 2005\)](#).

9.39 If the facility conducts the removal of asbestos or asbestos-containing products, does it ensure that the removal is conducted in a manner that prevents risks to people and the environment and does it comply with the following requirements: [\[Asbestos Removal Decree 2005 \(Asbestverwijderingsbesluit 2005\), Articles 7 and 8\]](#)

- If technically possible, asbestos and asbestos-containing products are completely or partially removed prior to any demolition;
- Asbestos or asbestos-containing products that have been removed are:
 - Separated and immediately packaged in air-tight durable bags or packaging, or stored in a closed container;
 - Marked in accordance with Question [9.38](#); and
 - Transferred to an approved waste management facility within two weeks of their removal?

9.40 If the facility conducts the removal of asbestos or asbestos-containing products, does it ensure that the following assessment activities are conducted after the removal and prior to allowing any other activities to proceed: [\[Asbestos Removal Decree 2005 \(Asbestverwijderingsbesluit 2005\), Article 9\]](#)

- Samples are collected by a qualified person and analyzed in an adequately equipped and qualified laboratory;
- A visual inspection is conducted, followed by collection of a final sample to verify that the concentration of asbestos dust in the air is less than 0.01 fiber/cm³, based on a reference period of two hours; and
- If the work site was outdoors, a visual inspection is conducted to verify that the presence of asbestos is no longer visually observed?

9.41 If the facility conducts demolition work where asbestos or asbestos-containing products are present, does it have a demolition permit from the local municipal authorities (i.e., “burgemeester en wethouders”)? [\[Asbestos Removal Decree 2005 \(Asbestverwijderingsbesluit 2005\), Article 10\(a\)\]](#)

Notes: This does not apply to professional removal companies that conduct the following asbestos removal activities: [Asbestos Removal Decree 2005 (Asbestverwijderingsbesluit 2005), Articles 4(1-2) and 10(b)]

- In or on buildings or objects that were constructed or manufactured (other than vessels referred to in Article 8:2, first paragraph, of the *Civil Code*), on or after January 1, 1994; and
- The activities listed in the notes to Question 9.14.

9.42 If the facility conducts activities that require a demolition permit as indicated in Question 9.41, does it ensure the following: [Asbestos Removal Decree 2005 (Asbestverwijderingsbesluit 2005), Article 10(l-n)]

- It provides prior written notification to the local municipal authorities of the date and time that the activities that involve asbestos or asbestos-containing products will take place;
- A copy of the permit kept is available on the demolition site; and **<RECORD KEEPING>**
- It submits a copy of the assessment results (see Question 9.40) within two weeks of the completion of the relevant activities?

9.43 If the facility does not require a demolition permit due to an exemption listed in the notes to Question 9.41, does it notify the local municipal authorities at least 8 days prior to the demolition and comply with any requirements specified by them regarding the demolition? [Asbestos Removal Decree 2005 (Asbestverwijderingsbesluit 2005), Article 10(c -g)]

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is provided for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter format does not contain the electronic links and other functionality contained in the MS Word version. The following instructions pertain to the fully linked Word version of the AQC.

Each question from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, electronic links back to the original protocol document are provided for quick access to this information when needed. To return to where you were in the AQC after following a link, use the back arrow located on the Audit Quick Check Toolbar.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X's to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

Additional audit questions can be added to the end of the AQC. Examples might include corporate requirements or best management practices. To add more questions, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Continue to sequentially number the questions by putting your cursor in the first column and typing the desired number.

Please Note: Additional rows will be included in the sort function. It is important that you number the questions for the sort functions to work. Please consider the following sort rules when entering custom text.

Sorting Responses

The AQC sort feature is accessed from the IAPC menu item located on the far right on the Main MS Toolbar. Please note the following criteria to take full advantage of this feature.

You can change the column titles as you see fit, but the menus assume that:

- the first column contains the question number and question text;
- the second column is "Not Applicable" (N/A) entries;
- the third column is "Complies" entries; and
- the fourth column is "Does Not Comply" entries.

A question is considered "Complies" if there is any text ("X" or "YES", for instance) in the "Complies" column.

A question is considered "Incomplete" if columns 2 to 4 are all empty.

Only one column should contain a value for any given question.

Click the IAPC menu item and then select one of the following menu choices:

Sort by Question Number

- Sorts the section by question number

Sort with Incomplete first

- Sorts the section with Incomplete first, Does Not Comply next, Complies next, then N/A

Sort with Non-compliant first

- Sorts the section with Does Not Comply first, Complies next, N/A next, then Incomplete

Sort with Compliant first

- Sort the section with Complies items first, Does Not Comply next, N/A next, then Incomplete

Sort with Not Applicable last

- Sort the section with not-applicable items last (Complies first, Does Not Comply next, Incomplete next, then N/A)

For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click the IAPC menu item and choose "Sort with Non-compliant first". Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

Once the completed AQC is sorted, save or print a copy of the results. The AQC can then be re-sorted using a different option.

SECTION 9.0 ASBESTOS**AUDIT QUICK CHECK**

SITE: _____ DATE: _____
ASSESSOR: _____

	Not Applicable	Complies	Does Not Comply
Q9.1 If the facility holds an Environmental Management Act (EMA) license that contains provisions that discuss the use and control of asbestos, does the facility comply with these provisions? [EMA, Article 8.11] I. General Risk Prevention Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.2 Does the facility ensure that the concentration of asbestos in air is at the lowest level possible below the asbestos threshold limit by implementing preventative measures, including the following: [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Articles 4.45(1-2) and 4.46] – Working methods are arranged so that no asbestos is produced, or if that is not technically possible, no asbestos is released into the air; – Buildings, installations and plant which are used in the application or treatment of asbestos or of asbestos-containing products are regularly and effectively cleaned and maintained; – Asbestos, asbestos-containing products and/or products from which asbestos is released are suitably packaged and transported in enclosed packaging; – Any waste products generated as a result of the application or treatment of asbestos or asbestos-containing products are (as soon as possible) collected and removed in suitably enclosed packaging, affixed with a label that clearly and legibly indicates that the contents contain asbestos? I. General Risk Prevention Measures Comments:			
Q9.3 If the facility exhibits a Class 2 or Class 3 risk, are washrooms and showers available to employees? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Articles 4.20(4) and 4.45(3)] I. General Risk Prevention Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.4 If personnel perform work where the danger of exposure to asbestos exists, are these persons provided with information on working with asbestos, including the following: [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Articles 4.45a and 4.51] – The health hazards associated with such work; – Requirements for monitoring concentrations of asbestos in the air and the asbestos threshold limits values; – Information on the potential health dangers from exposure to asbestos; – Protective measures with respect to asbestos-contaminated work clothing; – Measures to reduce exposure to asbestos to as low a level as possible; and – The correct use of Personal Protective Equipment (PPE)? I. General Risk Prevention Measures Comments:			
Q9.5 Are air samples collected to ensure that employees are not exposed to asbestos levels that exceed the asbestos threshold limit? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.47(1)] See protocol for notes. I. General Risk Prevention Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.6 Does the air monitoring referenced in Question 9.5 meet the following requirements: [<i>Occupational Conditions Decree (Arbeidsomstandighedenbesluit), Article 4.47(5-9)</i>] – Samples are representative of the exposure of individual employees to asbestos; – Sampling is conducted in a manner that allows for weighting to be determined or calculated for an employee asbestos exposure time that is representative of an 8-hour reference period; – Sampling is conducted by a person who has the required expertise; – Sample analysis is conducted in a laboratory that is adequately equipped and has experience with the required analytical/identification techniques; and – The members of the Worker's Council (or if none exists, employee representatives) have access to these analytical results and explanations with regard to their significance? See protocol for notes. I. General Risk Prevention Measures Comments:			
Q9.7 Does the facility ensure that samples are taken from the individual breathing zone as defined in the note below, using approved monitoring equipment and methods? [<i>Ministerial Decision on Labor Legislation (Arbeidsomstandighedenregeling), Article 4.22</i>] See protocol for notes. I. General Risk Prevention Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.8 If the asbestos threshold limit is exceeded, does the facility implement appropriate protective response measures as soon as possible to bring the level of asbestos in air to below this limit? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Articles 4.47a (1) and 4.46] I. General Risk Prevention Measures Comments:			
Q9.9 If the asbestos threshold limit is exceeded, does the facility inform the Worker's Council (or if none exists, employee representatives) as soon as possible of the exceedance, its cause, and the measures to be taken to reduce exposure to a safe level? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.47a (2)] See protocol for notes. I. General Risk Prevention Measures Comments:			
Q9.10 If the response measures do not reduce the exposure to asbestos to below the asbestos threshold limit, does the facility ensure that it provides the workers with effective personal protective equipment (PPE) to reduce their exposure to asbestos before continuing work? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.47a (3)] I. General Risk Prevention Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.11 If the exposure to asbestos cannot be reduced except through the use of personal protective equipment, does the use of PPE meet the following requirements: [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.47a (4-6)] – Is limited to only those periods when strictly necessary; and – Adequate periods of rest are provided, with their frequency and duration determined by the level of exertion and the climatic conditions where the work is being conducted? See protocol for notes. I. General Risk Prevention Measures Comments:			
Q9.12 Following the implementation of effective measures to reduce the concentration levels of asbestos, does the facility undertake additional asbestos air monitoring to determine if its risk classification (Class 1, 2 or 3, defined above) will change? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.47a (8)] I. General Risk Prevention Measures Comments:			
Q9.13 Prior to beginning any new activities, does the facility ensure that a final assessment is conducted of any areas where work with asbestos has been conducted? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.47b (1)] I. General Risk Prevention Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.14 Does the assessment in Question 9.13 include a visual inspection that confirms that asbestos is no longer visually perceptible? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit), Article 4.47b (2)</i>] I. General Risk Prevention Measures Comments:			
Q9.15 Prior to beginning any work projects that involve asbestos or asbestos-containing products, does the facility ensure that a written notification is provided to the Labor Inspectorate ("toezichthouder") that includes at least the following information: [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit), Article 4.47c (1)</i>] – The location where the proposed work will be performed; – The types and quantities of asbestos-containing products; – A description of the asbestos work or work with asbestos-containing products, including the working methods and the risk classification (Class 1, 2 or 3) based on the (predicted) concentration of asbestos dust in the air; – The number of employees involved; – The date and time the work is scheduled to begin, as well as its duration; and – The measures to be taken to prevent exposure of workers to asbestos? I. General Risk Prevention Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.16 If a change in notified working conditions could lead to a significant increase in worker exposure to asbestos dust or asbestos-containing products, does the facility ensure that a new/revised notification is provided to the Labor Inspectorate? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.47c (2)] I. General Risk Prevention Measures Comments:			
Q9.17 Are the notifications in Question 9.15 and Question 9.16 made available to the Worker's Council and/or employee representatives? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.47c (3)] I. General Risk Prevention Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.18 If the risk assessment indicates that the prevention measures indicated in the Subsection entitled, "General Risk Prevention Measures" will not be sufficient to maintain the asbestos levels in air below the asbestos threshold limit, does the facility implement the following additional precautionary measures: [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.48a (1-2)] – Appropriate respiratory protection and other personal protective equipment (PPE) is provided and its use is made mandatory; – A warning sign is posted in the work area, indicating that exceedances of the asbestos threshold limit are expected; and See protocol for notes. – The spread of dust from asbestos or asbestos-containing materials to areas outside the premises where the work is conducted is prevented? II. Supplemental Prevention Measures for Risk Classes 2 and 3 Comments:			
Q9.19 Is the Worker's Council (or if none exists, are employee representatives) given the opportunity to provide an opinion regarding any additional preventions measures? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.48a(3)] II. Supplemental Prevention Measures for Risk Classes 2 and 3 Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.20 Prior to beginning any work (other than the asbestos work), are any asbestos and asbestos-containing products that are present disposed of, unless such disposal represents a greater danger to the safety and health of employees? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.48a(4)] II. Supplemental Prevention Measures for Risk Classes 2 and 3 Comments:			
Q9.21 If the facility has asbestos work performed that requires asbestos certification as noted below, has a written work plan been established prior to beginning the asbestos work, that addresses effective measures to protect the health of employees involved in performing such work? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Articles 4.50 and 4.54d(1)] See protocol for notes. II. Supplemental Prevention Measures for Risk Classes 2 and 3 Comments:			
Q9.22 If an inventory report is required as indicated in Question 9.31, are the results of the inventory report incorporated into the work plan? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.50(2)] II. Supplemental Prevention Measures for Risk Classes 2 and 3 Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.23 If the facility has an asbestos work plan as indicated above, are the following requirements met: [Occupational Conditions Decree (Arbeidsomstandigheden-besluit), Article 4.50(5-6)] – The activities in the work plan are conducted in accordance with that plan; and – A copy of the work plan is kept available at the work site and provided to the supervisory authority, upon request? <RECORD KEEPING> II. Supplemental Prevention Measures for Risk Classes 2 and 3 Comments:			
Q9.24 Are the following provisions met with regard to the work clothes and PPE used during asbestos work: [Occupational Conditions Decree (Arbeidsomstandigheden-besluit), Article 4.51(1-3)] – Work clothes or protective clothes remain (and are cleaned) at the facility unless they are to be laundered in external establishments which are specially equipped for this sort of work; – Asbestos-contaminated clothing is transported to such external laundries in closed containers; – PPE is checked and cleaned after every use and stored in separate designated storage areas; and – Faulty PPE is never used? II. Supplemental Prevention Measures for Risk Classes 2 and 3 Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.25 After the completion and decontamination of an asbestos-work site and prior to beginning other work, is a final assessment of the workplace conducted that includes the following: [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.51a (1-4)] – Samples are collected by a qualified person and analyzed in an adequately equipped and qualified laboratory; – A visual inspection is conducted, followed by collection of a final sample to verify that the concentration of asbestos dust in the air is less than 0.01 fiber/cm³, based on a reference period of two hours; – If the work site was outdoors, a visual inspection is conducted after cleaning/decontamination, by a company that is adequately equipped for such an inspection, to verify that the presence of asbestos is no longer visually observed; and – If an outdoor work site involved asbestos-containing soil, a visual inspection is conducted by a company that is adequately equipped for such an inspection, to verify that the concentration of asbestos is not more than 100 mg/kg of dry material? II. Supplemental Prevention Measures for Risk Classes 2 and 3 Comments:			
Q9.26 If the facility requires that personnel work with asbestos in a Class 2 or 3 risk area, are medical exams provided? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.52] See protocol for notes. II. Supplemental Prevention Measures for Risk Classes 2 and 3 Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.27 For each medical exam that is conducted, as referenced in Question 9.26, are records that include information on the nature and duration of exposure entered into a register? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.53(1)] <RECORD KEEPING> See protocol for notes. II. Supplemental Prevention Measures for Risk Classes 2 and 3 Comments:			
Q9.28 Does the facility provide access to statistical information relative to employee exposure to the Workers Counsel or to employee representatives, if there is no Council? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.53(4)] See protocol for notes. II. Supplemental Prevention Measures for Risk Classes 2 and 3 Comments:			
Q9.29 Are employees notified of their examination results and the exposure information that has been recorded? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.53(3)] II. Supplemental Prevention Measures for Risk Classes 2 and 3 Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.30 If the facility has a Class 3 risk, does the final workplace assessment described in the first two bullets of Question 9.25 include an equivalent assessment of areas that are adjacent to the completed asbestos work project? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.54] See protocol for notes. II. Supplemental Prevention Measures for Risk Classes 2 and 3 Comments:			
Q9.31 Does the facility have a certified company conduct an asbestos inventory (if not certified itself) as a part of its risk assessment if it conducts any of the following activities: [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.54a (1 and 4)] – Partial or total demolition of a construction/structure (with the exception of earthworks) or an object that contains asbestos or asbestos-containing products; – Removal of asbestos or asbestos-containing products from a construction/structure or object (as indicated above); and/or – Clean-up activities to remove asbestos or asbestos-containing products which were released due to an accident? See protocol for notes. III. Asbestos Inventory and Activities Requiring Certification Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.32 If the facility engages a company to remove asbestos as indicated above, does the facility provide the company with a copy of the inventory report? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.54a(5)] and [<i>Asbestos Removal Decree 2005 (Asbestverwijderingsbesluit 2005)</i>, Article 5] III. Asbestos Inventory and Activities Requiring Certification Comments:			
Q9.33 Are certificates (or their copies) that verify/attest to the completion of an asbestos inventory and the qualification of the supervising asbestos expert (see Question 9.35) available at the work site and to the supervising authority upon request? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Articles 4.54a(6) and 4.54d(9)] <RECORD KEEPING> III. Asbestos Inventory and Activities Requiring Certification Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.34 If the facility is a Class 2 or Class 3 risk facility, does it have a certificate of authorization for asbestos removal, issued by the Minister of Housing, Spatial Development and Environment or a certifying institution if it performs any of the following activities: [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, 4.54d(1)] and [<i>Asbestos Removal Decree 2005 (Asbestverwijderingsbesluit 2005)</i>, Article 6] – Partially or completely demolishes or breaks down buildings or constructions that contain asbestos or asbestos-containing products; – Removes asbestos or asbestos-containing products from buildings or constructions; – Conducts clean-up activities at the workplace, after the activities above are performed; and/or – Conducts clean-up activities to remove asbestos or asbestos-containing products which were released due to an accident? III. Asbestos Inventory and Activities Requiring Certification Comments:			
Q9.35 Does the facility ensure that individuals carrying out Class 2 or Class 3 risk activities are certified as asbestos removal experts by the Minister of Social Affairs and Employment or a certifying institution? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.54d (5-7)] and [<i>Ministerial Decision on Labor Legislation (Arbeidsomstandighedenregeling)</i>, Article 4.27] See protocol for notes. III. Asbestos Inventory and Activities Requiring Certification Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.36 If the facility's activities correspond with the activities described in the note below and involve soil that has been contaminated with asbestos, does it ensure that these activities are supervised by a person who has an industrial hygiene or safety management certificate? [<i>Occupational Conditions Decree (Arbeidsomstandigheden-besluit)</i>, Article 4.54d (8)] and [<i>Decree on Asbestos Products (Productenbesluit asbest)</i>, Article 5 (e-f)] See protocol for notes. III. Asbestos Inventory and Activities Requiring Certification Comments:			
Q9.37 Does the facility ensure that it does not manufacture, import, have in stock, provide, use or process asbestos or asbestos-containing products? [<i>Decree on Asbestos Products (Productenbesluit asbest)</i>, Article 4] See protocol for notes. IV. Asbestos Uses and Prohibitions Comments:			
Q9.38 If the facility has asbestos-containing products in stock (under an exception noted above) to provide to another person or for its own use, are such products marked as indicated in the Appendix to the <i>Decree on Asbestos Products (Productenbesluit asbest)</i>? [<i>Decree on Asbestos Products (Productenbesluit asbest)</i>, Article 7(1)] See protocol for notes. IV. Asbestos Uses and Prohibitions Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.39 If the facility conducts the removal of asbestos or asbestos-containing products, does it ensure that the removal is conducted in a manner that prevents risks to people and the environment and does it comply with the following requirements: [<i>Asbestos Removal Decree 2005 (Asbestverwijderingsbesluit 2005), Articles 7 and 8</i>] – If technically possible, asbestos and asbestos-containing products are completely or partially removed prior to any demolition; – Asbestos or asbestos-containing products that have been removed are: – Separated and immediately packaged in air-tight durable bags or packaging, or stored in a closed container; – Marked in accordance with Question 9.38; and – Transferred to an approved waste management facility within two weeks of their removal? V. Removal of Asbestos by Non-Professional Companies Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.40 If the facility conducts the removal of asbestos or asbestos-containing products, does it ensure that the following assessment activities are conducted after the removal and prior to allowing any other activities to proceed: [<i>Asbestos Removal Decree 2005 (Asbestverwijderingsbesluit 2005), Article 9</i>] – Samples are collected by a qualified person and analyzed in an adequately equipped and qualified laboratory; – A visual inspection is conducted, followed by collection of a final sample to verify that the concentration of asbestos dust in the air is less than 0.01 fiber/cm³, based on a reference period of two hours; and – If the work site was outdoors, a visual inspection is conducted to verify that the presence of asbestos is no longer visually observed? V. Removal of Asbestos by Non-Professional Companies Comments:			
Q9.41 If the facility conducts demolition work where asbestos or asbestos-containing products are present, does it have a demolition permit from the local municipal authorities (i.e., “burgemeester en wethouders”)? [<i>Asbestos Removal Decree 2005 (Asbestverwijderingsbesluit 2005), Article 10(a)</i>] See protocol for notes. V. Removal of Asbestos by Non-Professional Companies Comments:			

	Not Applicable	Complies	Does Not Comply
Q9.42 If the facility conducts activities that require a demolition permit as indicated in Question 9.41, does it ensure the following: [<i>Asbestos Removal Decree 2005 (Asbestverwijderingsbesluit 2005), Article 10(l-n)</i>] – It provides prior written notification to the local municipal authorities of the date and time that the activities that involve asbestos or asbestos-containing products will take place; – A copy of the permit kept is available on the demolition site; and <RECORD KEEPING> – It submits a copy of the assessment results (see Question 9.40) within two weeks of the completion of the relevant activities? V. Removal of Asbestos by Non-Professional Companies Comments:			
Q9.43 If the facility does not require a demolition permit due to an exemption listed in the notes to Question 9.41, does it notify the local municipal authorities at least 8 days prior to the demolition and comply with any requirements specified by them regarding the demolition? [<i>Asbestos Removal Decree 2005 (Asbestverwijderingsbesluit 2005), Article 10(c -g)</i>] V. Removal of Asbestos by Non-Professional Companies Comments:			

10.0 GENERAL HEALTH AND SAFETY

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

- General Requirements.....10-5
- Designated Work Groups and Health and Safety Representatives 10-11
- Health and Safety Committees 10-15
- Issue Resolution.....10-16
- Facility First Aid 10-18
- Incident Notification 10-22
- Risk Control Measures.....10-24
- Risk and Security Management Processes.....10-24
- Emergency Management Planning 10-26

Tables or Appendices referenced in the protocol are located at the end of this section, along with our audit scorecard, entitled Audit Quick Check. This protocol applies to facilities located throughout the State of Victoria, Australia.

Notes: Australian national legislation can be accessed by searching the lists of Acts and Legislative Instruments, by title, year or registration number, at:

<http://www.comlaw.gov.au/comlaw/comlaw.nsf/sh/homepage> (last accessed in August 2009).

Victoria legislation can be accessed by searching the alphabetical lists of Acts and Statutory Rules under “Victorian Law Today” at: <http://www.legislation.vic.gov.au/> (last accessed in August 2009).

Key legislation and regulations covered in this protocol are noted as follows:

National

- **Critical Infrastructure Emergency Risk Management and Assurance Handbook; Second Edition** [November 2003, as last published in May 2004]. This Handbook provides additional details related to establishing a risk management process, as outlined in AS/NZS 4360-2004. It is made mandatory by the *Terrorism (Community Protection) (Prescribed Standards) Regulations 2007* (Vic).

Victoria

- **Occupational Health and Safety Act 2004** [Act No. 107 of 2004, as last amended by *Occupational Health and Safety Amendment (Employee Protection) Act 2009*, Act No. 34 of 2009]. This Act addresses the requirements to protect persons at work and assist in providing safe working environments by ensuring adequate training and instruction.
- **Occupational Health and Safety Regulations 2007** [S.R. No. 54 of 2007, as last amended by *Occupational Health and Safety (Chrysotile Exemption) Amendment Regulations*, S.R. No. 140 of 2007]. These Regulations are intended to complement the *Occupational Health and Safety Act 2004*. The Regulations provide for health and safety in relation to workplaces and hazards, activities and equipment at workplaces and ensure for the safe operation of major hazard facilities to reduce the likelihood of a serious incident. The Regulations also set forth requirements for the registration of certain people engaged in construction work and for the licensing of certain people engaged in high risk work. The Regulations establish procedures for the resolution of health and safety issues at workplaces and establish requirements related to other matters that are required or permitted by the Act or that are necessary to give effect to the Act.
- **Terrorism (Community Protection) (Prescribed Standards) Regulations 2007** [S.R. No. 81 of 2007]. These Regulations prescribe the standards for the conduct of training exercises and the preparation of risk management plans.

Standards

- **Australian/New Zealand Standard 4360-2004: Risk Management** [AS/NZS 4360-2004, as published from time to time]. This Standard provides general guidelines for managing risk. It specifies elements of the risk management process. It does not provide specific details relevant to any one industry, and it may be applied to all sectors and activities. It is made mandatory by the *Terrorism (Community Protection) (Prescribed Standards) Regulations 2007* (Vic).

- **Australian/New Zealand Standard HB 436-2004: Risk Management Guidelines, Companion to AS/NZS 4360-2004** [HB 436-2004, as published from time to time]. This Handbook is a companion volume to AS/NZS 4360-2004. The two documents are designed to be used simultaneously to aid in a facility's development of a risk management process. It is made mandatory by the *Terrorism (Community Protection) (Prescribed Standards) Regulations 2007* (Vic).
- **Australian/New Zealand Standard HB 167-2006: Security Risk Management** [HB 167-2006, as published from time to time]. This Standard describes the elements of a security management process. It is made mandatory by the *Terrorism (Community Protection) (Prescribed Standards) Regulations 2007* (Vic).

Compliance Codes

The Occupational Health and Safety Act 2004 does not make provision for approval of Codes of Practice. Instead, Victoria WorkCover issues notices in the Government Gazette approving a Compliance Code. Compliance with a notified Compliance Code will be considered to be compliance with the Occupational Health and Safety Act 2004. [Occupational Health and Safety Act 2004, Sections 149 and 150] However, evidence of a failure to observe a Compliance Code may be used as evidence in proceedings for an offence under the Occupational Health and Safety Act 2004 or the Occupational Health and Safety Regulations 2007. Victoria WorkCover is also authorized to notify approved guidelines. Guidelines are advisory in nature. [Occupational Health and Safety Act 2004, Section 12] Approved Compliance Codes under the Occupational Health and Safety Act 2004 can be accessed at: http://www.worksafe.vic.gov.au/wps/wcm/connect/WorkSafe/Home/Laws+and+Regulations/Occupational+Health+and+Safety/Compliance+Codes/D_Compliance+Codes (last accessed in August 2009). Compliance Codes relevant to this protocol section are listed below.

- **Compliance Code - Communicating Occupational Health and Safety Across Languages** [18 September 2008]. This Code replaced Code of Practice No. 16 - *Provision of Occupational Health and Safety Information in Languages Other than English* (1 October 1992). It provides guidance regarding the duty to provide occupational health and safety information in multiple languages.
- **Compliance Code - First Aid in the Workplace** [18 September 2008]. This Code replaced Code of Practice No. 18 - *First Aid in the Workplace* (1 June 1995). It covers first aid arrangements including first aid needs assessment, first aid training, first aid kits and first aid facilities.
- **Compliance Code – Workplace Amenities and Work Environment** [19 September 2008]. This Code replaced the Code of Practice (No. 3) - *Workplaces* (1988). It provides

guidance regarding the duty to provide adequate amenities for employee health and safety in the workplace.

This protocol section updates information contained in the prior version (2007). Specific additions, deletions and other changes made relative to the earlier version of the protocol are summarized in Appendix 10-A.

General Health and Safety

Notes: The following terms apply to this section: [Occupational Health and Safety Act 2004, Sections 5 and 20(2)]

- *“Authority” means the Victorian WorkCover Authority;*
- *“Employee” means a person employed under a contract of employment or contract of training;*
- *“Employer” means a person who employs one or more other persons under contracts of employment or contracts of training;*
- *“Plant” includes any machinery, equipment, appliance, implement and tool, or any component and anything fitted, connected or appurtenant to the plant;*
- *“Practicable” means practicable having regard to:*
 - *The likelihood of the hazard or risk concerned eventuating;*
 - *The degree of harm that would result if the hazard or risk eventuated;*
 - *What the person concerned knows, or ought reasonably to know, about the hazard or risk and any ways of eliminating or reducing the hazard or risk;*
 - *The availability and suitability of ways to eliminate or reduce the hazard or risk; and*
 - *The cost of eliminating or reducing the hazard or risk;*
- *“Self-employed person” means a person, other than an employer, who works for gain or reward otherwise than under a contract of employment or training;*
- *“Substance” means any natural or artificial substance, whether in solid or liquid form or in the form of a gas or vapor; and*
- *“Workplace” means any place, whether or not in a building or structure, where employees work.*

General Requirements

- 10.1** Does the facility ensure that all persons who control or manage matters that give rise or may give rise to risks to health or safety eliminate or reduce those risks so far as is reasonably practicable? *[Occupational Health and Safety Act 2004, Section 4]*

Notes: The following actions are recommended under the Occupational Health and Safety Act 2004: [Occupational Health and Safety Act 2004, Section 4]

- *Employers and self-employed persons should be proactive, and take all reasonably practicable measures, to ensure health and safety at workplaces and in the conduct of undertakings;*
- *Employers and employees should exchange information and ideas about risks to health and safety and measures that can be taken to eliminate or reduce those risks; and*

- *Employees are entitled, and should be encouraged, to be represented in relation to health and safety issues.*

10.2 Does the facility ensure that it provides and maintains a working environment for employees that is safe and without risks to health, as far as is practicable, including the following: *[Occupational Health and Safety Act 2004, Section 21(1) & (2)]*

- Provides and maintains plant and systems of work that are safe and without risks to health;
- Makes arrangements to ensure the safety and absence of risks to health in connection with the use, handling, storage and transport of plant and substances;
- Maintains any workplace under the control and management of the employer in a condition that is safe and without risks to health;
- Provides adequate facilities for the welfare of employees at any workplace under the control and management of the employer; and
- Provides such information, instruction, training and supervision to employees as are necessary to enable the employees to perform their work in a manner that is safe and without risks to health?

Notes: The term “employee” includes an independent contractor engaged by an employer and any employees of the independent contractor. The duties of an employer extend to such an independent contractor and his/her employees in matters over which the employer has control, or would have had control but for any agreement to the contrary between the employer and the independent contractor. [Occupational Health and Safety Act 2004, Section 21(3)]

10.3 Does the facility ensure that, so far as is practicable, it provides the following services to employees: *[Occupational Health and Safety Act 2004, Section 22(1-2)]* **<RECORD KEEPING>**

- Monitors the health of the employees;
- Keeps information and records relating to the health and safety of the employees;

Notes: The Occupational Health and Safety Act 2004 does not specify the retention time for these records.

- Employs or engages persons who are suitably qualified and are able to provide advice to the facility in relation to the health and safety of the employees;
- Monitors conditions at any workplace under the control and management of the facility; and
- Provides information to the employees, in such languages as are appropriate, with respect to health and safety at the workplace, including the names of persons to whom an employee may make an inquiry or complaint in relation to health and safety?

Notes: The Compliance Code - Communicating Occupational Health and Safety Across Languages replaced the Code of Practice No. 16 - Provision of Occupational Health and Safety Information in Languages Other than English. This Compliance Code provides guidance for complying with the duty to communicate occupational health and safety information in multiple languages. See the notes under the topic "Compliance Codes" in the legislation list at the beginning of this protocol section for details on the legal status of Compliance Codes and a weblink for accessing them.

- 10.4** Are the means of entering and leaving any workplace under the facility's control maintained, so far as is practicable, as safe and without risks to health? *[Occupational Health and Safety Act 2004, Section 26(1)]*
- 10.5** Does the facility ensure it does not recklessly engage in conduct that places or may place another person who is at a workplace in danger of serious injury, without a lawful excuse? *[Occupational Health and Safety Act 2004, Section 32]*
- 10.6** Does the facility, so far as is reasonably practicable, consult with the employees who are, or are likely to be, directly affected, when doing any of the following: *[Occupational Health and Safety Act 2004, Section 35]*
- Identifying or assessing hazards or risks to health or safety;
 - Making decisions about the measures to be taken to control risks to health or safety;
 - Making decisions about the adequacy of facilities for the welfare of employees;

- Making decisions about the procedures for any of the following:
 - Resolving health or safety issues;
 - Consulting with employees; or
 - Monitoring the health of employees;
- Providing information and training to employees;
- Determining the membership of any health and safety committee; and
- Proposing changes that may affect health or safety to any of the following:
 - A workplace;
 - Plant, substances or other things used at a workplace;
 - Conduct of work; or
 - Anything else required in this protocol section by regulations made under the *Occupational Health and Safety Act 2004*?

10.7 Does the facility consult with employees by doing the following: [*Occupational Health and Safety Act 2004, Section 36(1)*]

- Sharing information with the employees about the topics on which the employer is required to consult;
- Giving the employees a reasonable opportunity to express their views about these topics; and

Notes: The term “reasonable” is not defined.

- Taking into account those views?

10.8 If the employees are represented by a health and safety representative, does the consultation described in the Question 10.7 involve the health and safety representative, with or without the involvement of the employees directly? [*Occupational Health and Safety Act 2004, Section 36(2)*]

- 10.9** Does the facility involve the health and safety representative in consultation by taking the following measures: *[Occupational Health and Safety Regulations 2007, Part 2.1.5(2)]*
- Providing the health and safety representative with all of the information about the topics that the facility provides, or intends to provide, information about to the employees;
 - Unless it is not reasonably practicable to do so, providing the information in the previous bullet to the health and safety representative a reasonable time before providing the information to the employees;
 - Inviting the health and safety representative to meet with the facility to consult about the topics about which the employees are informed;
 - If the invitation is accepted, or if otherwise requested by the health and safety representative, meeting with the health and safety representative to consult about these topics;
 - Giving the health and safety representative a reasonable opportunity to express his/her views about these topics; and
 - Taking into account the health and safety representative's views about these topics?

Notes: The terms “reasonable time” and “reasonable opportunity” are not defined.

- 10.10** If the facility and the employees have agreed to procedures for undertaking consultations, is the consultation undertaken in accordance with those procedures? *[Occupational Health and Safety Act 2004, Section 36(3)]*
- 10.11** Does the facility ensure that it assists an inspector for any entry, inspection, examination, or inquiry to carry out his or her duties? *[Occupational Health and Safety Act 2004, Section 121]*
- 10.12** If the inspector issues a non-disturbance notice, does the facility comply with the requirements of the notice? *[Occupational Health and Safety Act 2004, Section 110]*

Notes: A non-disturbance notices requires the facility to do the following: [Occupational Health and Safety Act 2004, Section 110]

- *Stop the use or movement of, or interference with, any specified plant, substance or other thing at the place; and/or*

- *Prevent the disturbance of the specified plant, substance or other thing or a specified area of the place where the plant, substance or other thing is located.*

10.13 If the facility receives an improvement notice from an inspector, does comply with the terms of the notice? *[Occupational Health and Safety Act 2004, Section 111(5)]*

Notes: An inspector may issue an improvement notice when he or she reasonably believes that the facility is contravening a provision of the Occupational Health and Safety Act 2004, or is likely to continue or repeat the contravention. [Occupational Health and Safety Act 2004, Section 111(1)]

The inspector may include directions as to the measures to be taken to remedy any matter or issue to which the improvement notice relates. [Occupational Health and Safety Act 2004, Section 111(3)]

10.14 If the facility receives a prohibition notice from an inspector, does it comply with the terms of the prohibition notice? *[Occupational Health and Safety Act 2004, Section 112(5)]*

Notes: An inspector can issue a prohibition notice when he or she is of the opinion that there is an activity which involves or will involve an immediate risk to the health and safety of any person. [Occupational Health and Safety Act 2004, Section 112(1)]

The inspector may include directions as to the measures to be taken to remedy any matter or issue to which the prohibition notice relates. [Occupational Health and Safety Act 2004, Section 112(3)]

10.15 Does the facility continue to pay an employee who must cease work solely because of a prohibition notice, during the period until the issue is resolved? *[Occupational Health and Safety Act 2004, Section 75(4)]*

10.16 Does the facility ensure that it does not injure or prejudice the employment of an employee, or threaten to injure or prejudice the employment of an employee, by reason only that the employee meets one of the following conditions: *[Occupational Health and Safety Act 2004, Section 76(2)]*

- Is a member of a health and safety committee, or has exercised any power as a health and safety representative or as a member of a health and safety committee;

- Assisted or gave any information to an inspector, an authorized representative of a registered employee organization, a health and safety representative, or a member of a health and safety committee; or
- Raised an issue or concern about health or safety to the employer, an inspector, an authorized representative of a registered employee organization, a health and safety representative, a member of a health and safety committee or an employee of the employer?

Notes: Prejudicing the employment of an employee includes the following: [Occupational Health and Safety Act 2004, Section 76(1)]

- *Dismissing an employee;*
- *Altering the position of an employee to the employee's detriment;*
- *Refusing or failing to offer employment to a prospective employee; or*
- *Treating a prospective employee less favorably than another prospective employee would be treated in offering terms of employment.*

10.17 Does the facility ensure it does not do any of the following: *[Occupational Health and Safety Act 2004, Section 125]*

- Intentionally hinder or obstruct an inspector in the performance of his or her functions, or induce or attempt to induce any other person to do so;
- Intentionally conceal from an inspector the location or existence of any other person or any plant, substance or other thing;
- Intentionally prevent or attempt to prevent any other person from assisting an inspector; or
- Assault, directly or indirectly intimidate or threaten, or attempt to intimidate or threaten, an inspector or a person assisting an inspector?

Designated Work Groups and Health and Safety Representatives

10.18 Are the particulars of a designated work group determined by negotiation? *[Occupational Health and Safety Act 2004, Section 43(2)]*

Notes: Negotiations concerning designated work groups are to be directed only at the following: [Occupational Health and Safety Act 2004, Section 44(1)]

- *The manner of grouping employees into one or more designated work groups at one or more workplaces that does the following:*

- *Best and most conveniently enables the interests of those employees relating to occupational health and safety to be represented and safeguarded; and*
- *Best takes account of the need for a health and safety representative for the designated work group or groups to be accessible to each member of the group;*
- *The number (which must be at least one) of health and safety representatives for each designated work group;*
- *The number of deputy health and safety representatives (if any) for each designated work group;*
- *The term of office (not exceeding 3 years) of each health and safety representative and deputy health and safety representative (if any); and*
- *Whether the health and safety representative or representatives for the designated work group or groups are authorized also to represent independent contractors, or a class of independent contractors and their employees.*

10.19 Does the facility do everything reasonable to ensure that negotiations on designated work groups start within 14 days after the request by an employee to establish one? *[Occupational Health and Safety Act 2004, Section 43(3)]*

10.20 If the negotiations on designated work groups result in agreement on the particulars, does the facility establish the designated work group or groups by giving written notice to the employees? *[Occupational Health and Safety Act 2004, Section 44(2)]*

10.21 If a variation to designated work groups is agreed, does the facility give written notice to the employees of the agreement variation? *[Occupational Health and Safety Act 2004, Section 44(4)]*

10.22 Does the facility ensure it does not coerce or attempt to coerce another person to withhold a request, or to withdraw a request, concerning designated work groups? *[Occupational Health and Safety Act 2004, Section 53(1)(a)]*

10.23 Does the facility ensure it does not coerce or attempt to coerce another person during the conduct of negotiations for designation of a work group, or during any negotiations for a variation of an agreement concerning designated work groups? *[Occupational Health and Safety Act 2004, Section 53(1)(b-c)]*

10.24 If the facility has established designated work groups of employees, has it taken into account the following in determining the composition of those designated work groups: *[Occupational Health and Safety Act 2004, Section 49]*

- The number of employees at the workplace;
- The nature of each type of work performed at the workplace;
- The number and grouping of employees who perform the same or similar types of work under similar arrangements;
- The areas at the workplace where each type of work is performed;
- The nature of any hazards at the workplace;
- Any overtime or shift working arrangements at the workplace or workplaces; and
- Whether other languages are spoken by the employees?

10.25 Does the facility ensure that at least one health and safety representative is elected from each designated work group at the facility? [*Occupational Health and Safety Act 2004, Section 54*]

Notes: A person ceases to be a health and safety representative upon the advent of the following: [Occupational Health and Safety Act 2004, Section 55(2)]

- *Ceasing to be an employee in the designated work group;*
- *Resigning as a health and safety representative;*
- *A majority of the members of the designated work group resolve (in writing) that the person should no longer represent the designated work group (but only if the person has held office for at least 12 months);*
- *A variation or change in the designated work group;*
- *Failure to be re-elected; or*
- *Disqualification by the Magistrate's Court.*

Functions of the health and safety representative include the following: [Occupational Health and Safety Act 2004, Section 58(1)]

- *Inspecting any part of the workplace at which a member of the representative's designated work group works, as follows:*
 - *At any time after giving reasonable notice to the employer or employer's representative; and*
 - *Immediately in the event of any accident, hazardous situation, dangerous occurrence or immediate risk to the health and safety of any person; and*
- *After consultation with employer's representative or representatives:*
 - *Accompanying any inspector during an inspection of the workplace;*

- *Requiring the establishment of a health and safety committee; and*
- *With the consent of the employee, being present at any interview between any employee and an inspector, or the employee and the facility, concerning health and safety.*

A health and safety representative generally only has duties relating to the health and safety of the designated work group for whom he or she has been elected, unless there is insufficient time to refer the matter to the health and safety representative for the other work group and any of the following is the case: [Occupational Health and Safety Act 2004, Section 59]

- *The health and safety representative is requested to intervene by a member of another designated work group; or*
- *There is an immediate risk to health or safety that affects or may affect a member of another designated work group.*

10.26 Does the facility keep an up-to-date written list of each health and safety representative and deputy health and safety representative for each designated work group (if any)? *[Occupational Health and Safety Act 2004, Section 71(a)]* **<RECORD KEEPING>**

10.27 Is a copy of the list health and safety representatives (and deputy health and safety representatives) displayed at each workplace, or is the list otherwise readily accessible to all employees? *[Occupational Health and Safety Act 2004, Section 71(b)]*

10.28 Does the facility ensure that it does not give any medical information regarding an employee to a health and safety representative, unless the employee has consented to the sharing of that information or the information is in a form that does not identify the employee? *[Occupational Health and Safety Act 2004, Section 69(2)]*

10.29 Subject to the requirements of Question 10.28, does the facility ensure that it meets the following conditions regarding health and safety representatives: *[Occupational Health and Safety Act 2004, Section 69(1)]*

- Permits the representative to have information on the actual or potential hazards arising at any workplace under the control and management of the facility, the activities conducted at the facility, and/or the plant or substances used at the workplace;
- Permits the representative to have information on the health and safety of the members of the designated work group, or persons whom the health and safety representative is authorized to represent;

- Allows a representative to be present at any interview concerning occupational health and safety between the facility and an employee or an inspector and an employee (with the consent of the employee); and
- Provides other facilities and assistance to health and safety representatives as are necessary or prescribed to enable them to perform their functions and duties?

10.30 Does the facility ensure that any person assisting a health and safety representative is allowed access to the workplace, unless the facility considers that the person is not suitable by reason of lack of knowledge regarding occupational health and safety? *[Occupational Health and Safety Act 2004, Section 70(1)]*

10.31 Does the facility comply with the terms of any provisional improvement notice issued to it? *[Occupational Health and Safety Act 2004, Section 62]*

Notes: The facility is required to either comply immediately or, within 7 days, request review by an inspector. If the inspector upholds the issuance of the safety improvement notice, the facility must comply at the time the inspector affirms the provisional improvement notice. [Occupational Health and Safety Act 2004, Section 63]

10.32 If a health and safety representative issues a provisional notice to the facility, does the facility do the following: *[Occupational Health and Safety Act 2004, Section 60(4)]*

- Bring the notice to the attention of each person whose work is affected by the notice; and
- Display a copy of the notice in a prominent place at or near the workplace, or part of the workplace, at which work affected by the notice is being performed?

Notes: Provisional notices may include directions as to the measures to take to remedy the violation or the matters or activities causing the violation. Directions may refer to a Compliance Code or offer ways in which the person can act in order to remedy the situation. [Occupational Health and Safety Act 2004, Section 61]

Health and Safety Committees

10.33 If the facility has been requested by a health and safety representative to establish a health and safety committee, has it done so within three months of that request? *[Occupational Health and Safety Act 2004, Section 72(1)]*

Notes: The facility must consult with the health and safety representative as to the composition and functions of the health and safety committee. [Occupational Health and Safety Act 2004, Section 58(1)]

The functions of the health and safety committee must include the following, as well as any other functions that are prescribed or agreed upon by the employer and the health and safety committee: [Occupational Health and Safety Act 2004, Section 72(3)]

- Facilitating co-operation between the facility and the employees in instigating, developing and carrying out measures designed to ensure the health and safety of employees at the workplace;*
- Formulating, reviewing and disseminating to the employees (in such languages as are appropriate) the standards, rules and procedures relating to health and safety which are to be conducted or complied with at the workplace; and*
- Performing any other functions agreed upon between the facility and the committee.*

- 10.34** Does the facility ensure that at least half of the members of the health and safety committee consist of employees and, so far as practicable, health and safety representatives or deputy health and safety representatives? *[Occupational Health and Safety Act 2004, Section 72(2)]*

Notes: No further information is provided in the Act about the other half of the committee.

- 10.35** Does the facility ensure that the health and safety committee meets no less than once every three months? *[Occupational Health and Safety Act 2004, Section 72(4)]*

Notes: Half of the members of a health and safety committee can require that a committee meeting be held at any time they so choose. [Occupational Health and Safety Act 2004, Section 72(4)]

Issue Resolution

- 10.36** If an issue arises concerning the health and safety of employees at the facility, is the issue resolved according to the procedures agreed upon between the facility and the health and safety committee or representatives, if any? *[Occupational Health and Safety Act 2004, Section 73(1)]*

Notes: If no procedures have been agreed to, the issue must be resolved according to the procedures in the Regulations (described in Question 10.37 through Question 10.41 in this subsection). [Occupational Health and Safety Act 2004, Section 73(1)]

10.37 Has the facility notified the employees, any health and safety representative and any health and safety committee, in the appropriate manner and languages, of the following: *[Occupational Health and Safety Regulations 2007, Part 2.2.2(1)]*

- Whether the facility intends to participate in the resolution of an issue or if it will nominate a representative; and
- If a representative is to be nominated, the name and position description of that representative?

Notes: If an issue arises before a nomination has been made, the owner of the facility, or, if he or she is not available, the most senior management representative in that part of the workplace where the issue has arisen, is responsible for dealing with the issue. [Occupational Health and Safety Regulations 2007, Part 2.2.2(2)]

Only a health and safety representative, or if there is no health and safety representative, an employee nominated by the affected employees, can act on behalf of employees affected by an issue. [Occupational Health and Safety Regulations 2007, Part 2.2.2(3) and (4)]

At any stage in the resolution of an issue, a party may seek the assistance of any relevant organization of employees or of employers to assist the parties to resolve the issue. [Occupational Health and Safety Regulations 2007, Part 2.2.2(5)]

If a health or safety issue arises in a workplace or from any undertaking of the facility where there is a health and safety representative, and an employee wishes to raise the issue for resolution, the employee must report the issue to that representative. If there is no health and safety representative, the employee must report the issue to the facility or the facility's representative. [Occupational Health and Safety Regulations 2007, Part 2.2.3(1) and (2)]

10.38 Does the facility appoint a management representative for resolving health and safety issues who meets the following requirements: *[Occupational Health and Safety Act 2004, Section 73(2)]*

- Is not a health and safety representative;
- Has an appropriate level of seniority; and
- Is sufficiently competent?

Notes: The term "sufficiently competent" is not defined.

- 10.39** Does the facility ensure that the management representative and the health and safety representative (or any employee nominated to deal with the issue) meet as soon as possible after an issue has been reported, and try to resolve the issue? *[Occupational Health and Safety Regulations 2007, Part 2.2.4(1)]*

Notes: The resolution of the issue must take into account any of the following factors that may be relevant: [Occupational Health and Safety Regulations 2007, Part 2.2.4(2)]

- *The number and location of employees affected by the issue;*
- *Whether appropriate temporary measures are possible or desirable;*
- *The time that may elapse before the hazard or risk is permanently corrected; and*
- *Who is responsible for performing and overseeing the removal of the hazard or risk.*

- 10.40** If requested to do so by any party involved in the resolution of an issue, does the facility set out in writing, to the satisfaction of all the parties, the details of the issue and all the matters relating to its resolution? *[Occupational Health and Safety Regulations 2007, Part 2.2.4(3)]*

- 10.41** Does the facility ensure that the details of any written or oral agreement that resolves an issue are brought to the attention of the employees and forwarded to the health and safety committee as soon as reasonably possible after the resolution of an issue? *[Occupational Health and Safety Regulations 2007, Part 2.2.4(4)]*

Notes: The details of the agreement must be in a form that is approved by all parties and in a manner and language agreed by the parties to be appropriate. [Occupational Health and Safety Regulations 2007, Part 2.2.4(5)]

Any of the parties to the resolution may forward details of any agreement to any relevant organization of employees or of employers. [Occupational Health and Safety Regulations 2007, Part 2.2.4(4)]

Facility First Aid

Notes: The Occupational Health and Safety Act 2004 and the Occupational Health and Safety Regulations 2007 do not include requirements for first aid providers or equipment. The Compliance Code - First Aid in the Workplace replaced Code of Practice No. 18 - First Aid in the Workplace, and provides recommendations for the provision of first aid facilities that will satisfy the obligations under the Act. See the notes under the topic "Compliance Codes" in the legislation list at the beginning of this protocol section for details on the legal status of Compliance Codes and for a weblink to access them.

Under the Compliance Code - First Aid in the Workplace, the facility has two options for addressing first aid needs.

- Option 1: Follow prescribed requirements; or
- Option 2: Conduct a risk assessment to determine facility-specific requirements.

In Option 1, the facility follows prescribed requirements related to the provision of first aid resources. If the facility chooses this option, it must follow the prescribed requirements in their entirety. However, Option 1 may need to be customized to address particular hazards at the facility (e.g., a facility with a risk of flying particles may need to add resources for addressing eye injuries). [Compliance Code - First Aid in the Workplace, Sections 14 and 15]

Option 1 is generally recommended for small to medium-sized facilities (not defined) with 10 or more employees, or facilities with fewer than 10 employees that have a higher level of risk. [Compliance Code - First Aid in the Workplace, Sections 31 and 32]

In Option 1, the specific requirements are based on the size of the facility and relative risk level for the work conducted. A low-risk workplace is one where employees are not exposed to hazards that could result in serious injury or illness. Examples include offices, libraries, and retail shops. A higher-risk workplace is one where employees may be exposed to hazards that could result in serious injury or illness (e.g., manufacturing plants, kitchens, workshops). Examples of serious injuries include: amputation of a limb, serious head injury, serious eye injury, electric shock, or loss of a bodily function. [Compliance Code - First Aid in the Workplace, Sections 33, 34, and 35]

Topics that are prescribed under Option 1 include: [Compliance Code - First Aid in the Workplace, Sections 37 through 66]

- *The number of first aid officers, their duties, and training;*
- *The number of first aid kits, their locations, and their contents;*
- *The number of first aid rooms and their requirements;*
- *Signage for first aid facilities; and*
- *Access to medical services (either within or outside the workplace).*

A low-risk workplace with fewer than 10 employees (referred to as a low-risk micro-business) does not have to comply with the requirements for first aid officers or first aid rooms. However, they must provide a first aid kit that includes the contents required in Option 1. [Compliance Code - First Aid in the Workplace, Section 71]

In Option 2, the facility conducts a risk assessment to determine the appropriate first aid resources for its specific operations. The facility can demonstrate compliance through a documented risk assessment that shows it has made reasonable decisions about first aid requirements, based on the facility's specific circumstances.

Option 2 is generally recommended for large organizations (not defined) or those that involve a complex range of hazards. However, a smaller organization that involves high risk or specialized work may choose to use Option 2.

The risk assessment must be conducted in consultation with the affected employees and their health and safety representative (if any). The systematic process under Option 2 includes: [Compliance Code - First Aid in the Workplace, Section 72]

- Identifying the hazards that could result in work-related injury or illness;*
- Assessing the likelihood and severity of work-related injury or illness;*
- Determining and providing the appropriate first aid facilities and training;*
- Evaluating the first aid facilities and training; and*
- Reviewing the facility's first aid resources on a regular basis or as circumstances change.*

The facility needs to take account of the following factors during the risk assessment: [Compliance Code - First Aid in the Workplace, Sections 73 through 88]

- The nature of the hazards and the severity of the risks;*
- Known occurrences of injuries, illnesses and incidents;*
- Size and layout of the workplace;*
- The number of employees;*
- When work is conducted (i.e., different shifts);*
- The way work is done; and*
- Location of the workplace.*

As a result of the risk assessment, the facility will determine the following resource needs: [Compliance Code - First Aid in the Workplace, Sections 90 through 117]

- The number of first aid officers, their duties, and training;*
- The number of first aid kits, their locations, and their contents;*
- The number of first aid rooms and their requirements;*
- Signage for first aid facilities; and*
- Access to occupational health professionals or other medical services (either within or outside the workplace).*

Question 10.42 through Question 10.46 in this subsection cover requirements that are common to both options under the Compliance Code - First Aid in the Workplace.

- 10.42** Does the facility, so far as is reasonably practicable, consult with the employees who are (or are likely to be) directly affected and/or with the health and safety representative (if any) regarding first aid needs, training, and changes to any procedures related to first aid?
[Compliance Code - First Aid in the Workplace, Section 18]

Notes: Refer to Question 10.6 through Question 10.10 for general consultation requirements.

10.43 Does the facility provide training on first aid resources at the following intervals:
[Compliance Code - First Aid in the Workplace, Section 20 and 21]

- As part of an employee's induction training;
- If there is a change in the location of first aid facilities;
- If there are any changes in the names, locations or contact details of first aid officers; and
- At appropriate intervals or as determined by a risk assessment, if the facility chooses Option 2 for addressing first aid compliance (see the notes at the beginning of this subsection)?

Notes: The training needs to be provided in a form that all employees can understand, including one or more of the following: [Compliance Code - First Aid in the Workplace, Section 22]

- *Audio and visual aids;*
- *Graphics (e.g., posters);*
- *Interpreters;*
- *Simple English phrases;*
- *Use of people who speak the same language as the employees to provide information; and/or*
- *Interactive practical demonstrations.*

10.44 Does the training discussed in Question 10.43 cover the following topics: *[Compliance Code - First Aid in the Workplace, Section 20]*

- The location of first aid kits;
- The names and work locations of trained first aid officers; and
- Procedures to be followed when first aid or further assistance is required?

10.45 Does the facility implement standard precautions to minimize exposure to blood and bodily fluids, as covered in Appendix F of the *Compliance Code - First Aid in the Workplace*?
[Compliance Code - First Aid in the Workplace, Section 27 and Appendix F]

Notes: A weblink to the Compliance Code is provided in the notes under the topic "Compliance Codes" in the legislation list at the beginning of this protocol section.

- 10.46** Does the facility offer first aid officers hepatitis B vaccinations, if they are likely to have contact with blood or bodily fluids? [*Compliance Code - First Aid in the Workplace, Section 29*]

Incident Notification

Notes: The Occupational Health and Safety (Incident Notification) Regulations 1997 were revoked on 1 July 2005. As of August 2009, no specific details on the information in records to be kept or notifications to be made have been specified under new regulations. <RECORD KEEPING>

- 10.47** Does the facility notify the Victorian WorkCover Authority immediately after it becomes aware of an incident at the workplace which has resulted in any of the following situations: [*Occupational Health and Safety Act 2004, Sections 37(1) and 38(1)*]

- The death of any person;
- A person requiring medical treatment within 48 hours of exposure to a substance;
- A person requiring immediate treatment as an in-patient in a hospital; or
- A person requiring immediate medical treatment for:
 - The amputation of any part of his/her body;
 - A serious head injury;
 - A serious eye injury;
 - The separation of his/her skin from underlying tissue (such as de-gloving or scalping);
 - Electric shock;
 - Spinal injury;
 - The loss of a bodily function; and/or

- Serious lacerations?

Notes: The term “serious” is not defined in the Act.

10.48 Does the facility notify the Authority immediately after it becomes aware of an incident which has exposed a person in the immediate vicinity of the incident to an immediate risk to the person's health and safety involving the following types of dangerous occurrences: *[Occupational Health and Safety Act 2004, Sections 37(2) and 38(1)]*

- The collapse, overturning, failure or malfunction of, or damage to, any item of plant listed in Table 11-1 in Section 11.0 of this protocol;
- The collapse or failure of an excavation or of any shoring supporting an excavation;
- The collapse or partial collapse of any part of a building or structure;
- An implosion, explosion or fire;
- The escape, spillage or leakage of any substance including dangerous goods; or

Notes: See Section 13.0 of this protocol for the definition of dangerous goods.

- The fall or release from a height of any plant, substance or object?

10.49 Does the facility also submit a written record to the Authority within 48 hours of any incident or dangerous occurrence, in the form approved in writing by the Authority? *[Occupational Health and Safety Act 2004, Section 38(3)]*

10.50 Does the facility ensure that copies of written records are made available for inspection by any of the following persons: *[Occupational Health and Safety Act 2004, Section 38(4)]*

<RECORD KEEPING>

- An inspector;
- The health and safety representative, if any;
- The health and safety committee, if any;
- A person, or a representative of a person, injured in the incident or whose health or safety was exposed to immediate risk by the incident; and

- A representative of a person whose death was caused by the incident?

10.51 If the facility was required to notify the Authority of an incident that has occurred at a workplace, does the facility ensure that the site where it occurred is not disturbed until an inspector arrives at the site, or another time as directed by the inspector? *[Occupational Health and Safety Act 2004, Section 39(1)]*

Notes: Notwithstanding of the prohibition in this question, the site may be disturbed for the following reasons: [Occupational Health and Safety Act 2004, Section 39(2)]

- *Protecting the health or safety of a person;*
- *Aiding an injured person involved in an incident; or*
- *Taking essential action to make the site safe or to prevent a further occurrence of an incident.*

10.52 Does the facility ensure that a copy of each written record of an incident is kept for at least 5 years? *[Occupational Health and Safety Act 2004, Section 38(4)]* **<RECORD KEEPING>**

Risk Control Measures

10.53 Does the facility ensure that any risk control measures implemented are properly installed (if applicable), used and maintained? *[Occupational Health and Safety Regulations 2007, Part 2.1.1(1)]*

Notes: This requirement does not apply to major hazard facilities (see Section 16.0 of this protocol). [Occupational Health and Safety Regulations 2007, Part 2.1.1(2)]

Risk and Security Management Processes

Notes: The Terrorism (Community Protection) (Prescribed Standards) Regulations 2007 require compliance with the standards referenced in this subsection. [Terrorism (Community Protection) (Prescribed Standards) Regulations 2007, Section 3] These Standards provide a general overview of the risk and security management processes expected to be in place for all facilities in Victoria.

AS/NZS 4360-2004, HB 436-2004, and HB 167-2006 may be purchased from <http://www.saiglobal.com/shop/Script/search.asp> (last accessed in August 2009).

“Risk” is defined as the chance of something happening that will have an impact on objectives. [AS/NZS 4360-2004, Section 1.3.13]

10.54 Does the facility include the following in its risk management process: *[AS/NZS 4360-2004, Section 2.2]*

- Communication and consultation with internal and external stakeholders;
- Establishment of the context in which risk management processes will take place;
- Identification of risks;
- Analysis of risks, including consequences and likelihood of risks;
- Evaluation of risks, including potential benefits and adverse outcomes of risks;
- Treatment of risks through cost-effective strategies and action plans for increasing potential benefits and reducing potential adverse effects; and
- Monitoring and review of all steps in the risk management process, particularly of treatment measures?

Notes: HB 436-2004 provides extensive details on methods that may be used generally to meet the requirements of this question.

The Critical Infrastructure Emergency Risk Management and Assurance Handbook provides details that may be used to develop risk management processes, as described in this question for critical infrastructure. "Critical infrastructure" is defined as a service, facility or group of facilities, the loss of which would have severe adverse effects on the physical, social, economic or environmental well-being or safety of the community. [Critical Infrastructure Emergency Risk Management and Assurance Handbook, Handbook Definitions Section] This Handbook is available at: http://www.ema.gov.au/www/emaweb/emaweb.nsf/Page/Publications_CommunityAwarenessPublications_CriticalInfrastructureEmergencyRiskManagementandAssuranceHandbook (last accessed in August 2009).

10.55 Does the facility conduct a security risk management process that includes the following steps: [HB 167-2006, Section 1.2.1]

- Communication and consultation with internal and external stakeholders;
- Establishment of the context in which security risk management processes will take place;
- Identification of risks (e.g., determine threats, vulnerabilities, possible scenarios, etc.);

- Analysis of risks, including existing control systems (e.g., security and emergency systems), consequences and likelihood of risks;
- Evaluation of risks, including tolerance for the risks and needs for further treatment of the risks;
- Treatment of risk, including the establishment of strategies, accountabilities, responsibilities, and budgets to manage the risks; and
- Monitoring and review of all steps in the risk management process, particularly of treatment measures?

Notes: HB 167-2006 provides extensive details on methods that may be used to meet the requirements of this question.

“Security risk management” is not specifically defined in the Standards. However, it is understood to extend beyond the typical financial, operational, market, employment, insurance and reputational risks, and to provide a powerful tool in assisting with prevention and management of the consequences of events that are outside of a facility’s normal understanding and experience. [HB 167-2006, Section 3]

Emergency Management Planning

Notes: The Occupational Health and Safety Act 2004 has a general requirement for an employer to provide and maintain a safe working environment and adequate facilities for the employees’ welfare, including the implementation of an emergency management plan. However, the Act and the Occupational Health and Safety Regulations 2007 do not give specific requirements related to facilities for employee welfare. [Occupational Health and Safety Act 2004, Sections 21(1) and 21(2)(d)] The Compliance Code - Workplace Amenities and Work Environment replaced the Code of Practice (No. 3) -- Workplaces, and provides recommendations for the provision of an emergency management plan that will satisfy the obligations under the Act. See the notes under the topic “Compliance Codes” in the legislation list at the beginning of this protocol section for details on the legal status of Compliance Codes and for a weblink to access them.

- 10.56** Does the facility provide employees with access to a written emergency management plan that clearly explains appropriate responses in case of an emergency, including the controlled movement of people from the workplace? *[Compliance Code - Workplace Amenities and Work Environment, Sections 148 and 153]*

Notes: The plan needs to be adequate to help employers and employees deal with incidents or situations that create an emergency that could pose a threat to life, health or

property, such as fire or explosion, dangerous chemical release, medical emergency, natural disaster, bomb threats, violence or robbery. External hazards may also affect the safety of the workplace (e.g., a chemical storage facility across the road) and need to be considered when preparing the plan. The plan needs to be based on an assessment of hazards associated with the work activity or workplace and the possible consequences of an incident occurring as a result of those hazards. The plan needs to be appropriate to the size and complexity of the work site and the number and type of occupants. [Compliance Code - Workplace Amenities and Work Environment, Sections 151 and 152]

10.57 Does the facility provide training for employees, managers and supervisors in implementation of the emergency management plan? *[Compliance Code - Workplace Amenities and Work Environment, Sections 148 and 155]*

10.58 Does the facility conduct regular practice runs of relevant procedures from the emergency management plan? *[Compliance Code - Workplace Amenities and Work Environment, Section 155]*

Notes: The Compliance Code - Workplace Amenities and Work Environment does not specify the frequency of these practice runs.

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is intended for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter one does not contain the electronic links and other functionality contained in the MS Word version.

Each of the questions from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, there are electronic links back to the original protocol document. To return to where you were in the AQC after following a link, use the “Return to Audit Quick Check” button located on the Audit Quick Check Toolbar.

Audit Quick Check Toolbar

The AQC Toolbar contains several automated functions and should be visible when you open the AQC document. To activate the toolbar if it is NOT visible, select View | Toolbars | and then click on Audit Quick Check Toolbar. You may move the toolbar to anyplace on the document by left clicking anywhere inside of the upper portion of the Toolbar (dark blue area) and dragging it to the desired location.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X’s to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

At the end of the AQC there is a section entitled, Additional Questions. You may add more questions at this point. Examples might include corporate requirements or best management practices. We have provided space for the insertion of several additional questions. If you wish to delete these additional spaces, select the row(s) you want deleted and press shift+delete. To add more questions, including the check boxes, copy and paste the last row of the table. To do this, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Then, copy the information in the row above by placing the cursor on the far left side of the row to be copied, outside the table margin, left click to highlight the information to be copied, and then right click and click on “Copy.” Lastly, move the cursor into the empty row and paste the copied information (Control C). You can continue to sequentially number the questions by putting your cursor on the existing number and changing it. Use “Control Tab” to create the spacing between the question number and the text of the question.

Sorting Responses and Transferring Information

There is a sort feature that you may want to use following completion of the audit. A sort box appears on the far right side of the toolbar. Press “Sort By” and then four choices will be identified, three of which correspond to a specific column number. For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click on Column 3 (unless you have customized the column headings and re-organized them, in which case you will select the column number of interest to you). Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

The fourth sort choice, Sequential, will sort the responses sequentially by column number (i.e., Column 1 responses first, followed by Column 2 responses, etc.).

WARNING: Once the sort feature has been used, you cannot automatically revert back to the original order unless you hit the “Undo Typing” symbol in the MS Word Toolbar. As a result, it is recommended that you save the “sorted” file to a different file name. In that way, you can preserve the original Audit Quick Check information, including original ordering of that information, plus the sorted information.

Transferring Information

Once you have collated all of the Does Not Comply questions (or whatever category of questions in which you have an interest), you can use “Block” and “Copy” to transfer that information to any other document. This feature will help in the eventual audit report writing.

Printing Quick Checklist

Click on the Print Quick Check button at the end of the document to print out only the Audit Quick Check; it will print to whatever you have designated as your default printer. If you are outside of your office and wish to print to a local printer, you will need to change the default printer setting on your computer to a local printer before using the Print Quick Check button.

10.0 GENERAL HEALTH AND SAFETY

AUDIT QUICK CHECK

SITE: _____

DATE: _____

ASSESSOR: _____

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
General Health and Safety			
See protocol for notes.			
General Requirements			
10.1 Does the facility ensure that all persons who control or manage matters that give rise or may give rise to risks to health or safety eliminate or reduce those risks so far as is reasonably practicable? [Occupational Health and Safety Act 2004, Section 4] See protocol for notes. Comments:			
10.2 Does the facility ensure that it provides and maintains a working environment for employees that is safe and without risks to health, as far as is practicable, including the following: [Occupational Health and Safety Act 2004, Section 21(1) & (2)] – Provides and maintains plant and systems of work that are safe and without risks to health; – Makes arrangements to ensure the safety and absence of risks to health in connection with the use, handling, storage and transport of plant and substances; – Maintains any workplace under the control and management of the employer in a condition that is safe and without risks to health; – Provides adequate facilities for the welfare of employees at any workplace under the control and management of the employer; and – Provides such information, instruction, training and supervision to employees as are necessary to enable the employees to perform their work in a manner that is safe and without risks to health? See protocol for notes.			

		<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
		Not Applicable	Complies	Does not Comply
	Comments:			
10.3	Does the facility ensure that, so far as is practicable, it provides the following services to employees: [Occupational Health and Safety Act 2004, Section 22(1-2)] <RECORD KEEPING> – Monitors the health of the employees; – Keeps information and records relating to the health and safety of the employees; See protocol for notes. – Employs or engages persons who are suitably qualified and are able to provide advice to the facility in relation to the health and safety of the employees; – Monitors conditions at any workplace under the control and management of the facility; and – Provides information to the employees, in such languages as are appropriate, with respect to health and safety at the workplace, including the names of persons to whom an employee may make an inquiry or complaint in relation to health and safety? See protocol for notes. Comments:			
10.4	Are the means of entering and leaving any workplace under the facility's control maintained, so far as is practicable, as safe and without risks to health? [Occupational Health and Safety Act 2004, Section 26(1)] Comments:			
10.5	Does the facility ensure it does not recklessly engage in conduct that places or may place another person who is at a workplace in danger of serious injury, without a lawful excuse? [Occupational Health and Safety Act 2004, Section 32] Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
10.6 Does the facility, so far as is reasonably practicable, consult with the employees who are, or are likely to be, directly affected, when doing any of the following: [Occupational Health and Safety Act 2004, Section 35] – Identifying or assessing hazards or risks to health or safety; – Making decisions about the measures to be taken to control risks to health or safety; – Making decisions about the adequacy of facilities for the welfare of employees; – Making decisions about the procedures for any of the following: – Resolving health or safety issues; – Consulting with employees; or – Monitoring the health of employees; – Providing information and training to employees; – Determining the membership of any health and safety committee; and – Proposing changes that may affect health or safety to any of the following: – A workplace; – Plant, substances or other things used at a workplace; – Conduct of work; or – Anything else required in this protocol section by regulations made under the Occupational Health and Safety Act 2004? Comments:			
10.7 Does the facility consult with employees by doing the following: [Occupational Health and Safety Act 2004, Section 36(1)] – Sharing information with the employees about the topics on which the employer is required to consult; – Giving the employees a reasonable opportunity to express their views about these topics; and See protocol for notes. – Taking into account those views? Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
10.8 If the employees are represented by a health and safety representative, does the consultation described in the Question 10.7 involve the health and safety representative, with or without the involvement of the employees directly? [Occupational Health and Safety Act 2004, Section 36(2)] Comments:			
10.9 Does the facility involve the health and safety representative in consultation by taking the following measures: [Occupational Health and Safety Regulations 2007, Part 2.1.5(2)] – Providing the health and safety representative with all of the information about the topics that the facility provides, or intends to provide, information about to the employees; – Unless it is not reasonably practicable to do so, providing the information in the previous bullet to the health and safety representative a reasonable time before providing the information to the employees; – Inviting the health and safety representative to meet with the facility to consult about the topics about which the employees are informed; – If the invitation is accepted, or if otherwise requested by the health and safety representative, meeting with the health and safety representative to consult about these topics; – Giving the health and safety representative a reasonable opportunity to express his/her views about these topics; and – Taking into account the health and safety representative's views about these topics? See protocol for notes. Comments:			
10.10 If the facility and the employees have agreed to procedures for undertaking consultations, is the consultation undertaken in accordance with those procedures? [Occupational Health and Safety Act 2004, Section 36(3)] Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
10.11 Does the facility ensure that it assists an inspector for any entry, inspection, examination, or inquiry to carry out his or her duties? [Occupational Health and Safety Act 2004, Section 121] Comments:	☐	☐	☐
10.12 If the inspector issues a non-disturbance notice, does the facility comply with the requirements of the notice? [Occupational Health and Safety Act 2004, Section 110] See protocol for notes. Comments:	☐	☐	☐
10.13 If the facility receives an improvement notice from an inspector, does comply with the terms of the notice? [Occupational Health and Safety Act 2004, Section 111(5)] See protocol for notes. Comments:	☐	☐	☐
10.14 If the facility receives a prohibition notice from an inspector, does it comply with the terms of the prohibition notice? [Occupational Health and Safety Act 2004, Section 112(5)] See protocol for notes. Comments:	☐	☐	☐
10.15 Does the facility continue to pay an employee who must cease work solely because of a prohibition notice, during the period until the issue is resolved? [Occupational Health and Safety Act 2004, Section 75(4)] Comments:	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
10.16 Does the facility ensure that it does not injure or prejudice the employment of an employee, or threaten to injure or prejudice the employment of an employee, by reason only that the employee meets one of the following conditions: [Occupational Health and Safety Act 2004, Section 76(2)] – Is a member of a health and safety committee, or has exercised any power as a health and safety representative or as a member of a health and safety committee; – Assisted or gave any information to an inspector, an authorized representative of a registered employee organization, a health and safety representative, or a member of a health and safety committee; or – Raised an issue or concern about health or safety to the employer, an inspector, an authorized representative of a registered employee organization, a health and safety representative, a member of a health and safety committee or an employee of the employer? See protocol for notes. Comments:			
10.17 Does the facility ensure it does not do any of the following: [Occupational Health and Safety Act 2004, Section 125] – Intentionally hinder or obstruct an inspector in the performance of his or her functions, or induce or attempt to induce any other person to do so; – Intentionally conceal from an inspector the location or existence of any other person or any plant, substance or other thing; – Intentionally prevent or attempt to prevent any other person from assisting an inspector; or – Assault, directly or indirectly intimidate or threaten, or attempt to intimidate or threaten, an inspector or a person assisting an inspector? Comments:			
Designated Work Groups and Health and Safety Representatives			
10.18 Are the particulars of a designated work group determined by negotiation? [Occupational Health and Safety Act 2004, Section 43(2)] See protocol for notes. Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
10.19 Does the facility do everything reasonable to ensure that negotiations on designated work groups start within 14 days after the request by an employee to establish one? [Occupational Health and Safety Act 2004, Section 43(3)] Comments:	☐	☐	☐
10.20 If the negotiations on designated work groups result in agreement on the particulars, does the facility establish the designated work group or groups by giving written notice to the employees? [Occupational Health and Safety Act 2004, Section 44(2)] Comments:	☐	☐	☐
10.21 If a variation to designated work groups is agreed, does the facility give written notice to the employees of the agreement variation? [Occupational Health and Safety Act 2004, Section 44(4)] Comments:	☐	☐	☐
10.22 Does the facility ensure it does not coerce or attempt to coerce another person to withhold a request, or to withdraw a request, concerning designated work groups? [Occupational Health and Safety Act 2004, Section 53(1)(a)] Comments:	☐	☐	☐
10.23 Does the facility ensure it does not coerce or attempt to coerce another person during the conduct of negotiations for designation of a work group, or during any negotiations for a variation of an agreement concerning designated work groups? [Occupational Health and Safety Act 2004, Section 53(1)(b-c)] Comments:	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
10.24 If the facility has established designated work groups of employees, has it taken into account the following in determining the composition of those designated work groups: [Occupational Health and Safety Act 2004, Section 49] – The number of employees at the workplace; – The nature of each type of work performed at the workplace; – The number and grouping of employees who perform the same or similar types of work under similar arrangements; – The areas at the workplace where each type of work is performed; – The nature of any hazards at the workplace; – Any overtime or shift working arrangements at the workplace or workplaces; and – Whether other languages are spoken by the employees? Comments:			
10.25 Does the facility ensure that at least one health and safety representative is elected from each designated work group at the facility? [Occupational Health and Safety Act 2004, Section 54] See protocol for notes. Comments:			
10.26 Does the facility keep an up-to-date written list of each health and safety representative and deputy health and safety representative for each designated work group (if any)? [Occupational Health and Safety Act 2004, Section 71(a)] <RECORD KEEPING> Comments:			
10.27 Is a copy of the list health and safety representatives (and deputy health and safety representatives) displayed at each workplace, or is the list otherwise readily accessible to all employees? [Occupational Health and Safety Act 2004, Section 71(b)] Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
10.28 Does the facility ensure that it does not give any medical information regarding an employee to a health and safety representative, unless the employee has consented to the sharing of that information or the information is in a form that does not identify the employee? [Occupational Health and Safety Act 2004, Section 69(2)] Comments:	☐	☐	☐
10.29 Subject to the requirements of Question 10.28, does the facility ensure that it meets the following conditions regarding health and safety representatives: [Occupational Health and Safety Act 2004, Section 69(1)] – Permits the representative to have information on the actual or potential hazards arising at any workplace under the control and management of the facility, the activities conducted at the facility, and/or the plant or substances used at the workplace; – Permits the representative to have information on the health and safety of the members of the designated work group, or persons whom the health and safety representative is authorized to represent; – Allows a representative to be present at any interview concerning occupational health and safety between the facility and an employee or an inspector and an employee (with the consent of the employee); and – Provides other facilities and assistance to health and safety representatives as are necessary or prescribed to enable them to perform their functions and duties? Comments:	☐	☐	☐
10.30 Does the facility ensure that any person assisting a health and safety representative is allowed access to the workplace, unless the facility considers that the person is not suitable by reason of lack of knowledge regarding occupational health and safety? [Occupational Health and Safety Act 2004, Section 70(1)] Comments:	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
10.31 Does the facility comply with the terms of any provisional improvement notice issued to it? [Occupational Health and Safety Act 2004, Section 62] See protocol for notes. Comments:			
10.32 If a health and safety representative issues a provisional notice to the facility, does the facility do the following: [Occupational Health and Safety Act 2004, Section 60(4)] – Bring the notice to the attention of each person whose work is affected by the notice; and – Display a copy of the notice in a prominent place at or near the workplace, or part of the workplace, at which work affected by the notice is being performed? See protocol for notes. Comments:			
Health and Safety Committees			
10.33 If the facility has been requested by a health and safety representative to establish a health and safety committee, has it done so within three months of that request? [Occupational Health and Safety Act 2004, Section 72(1)] See protocol for notes. Comments:			
10.34 Does the facility ensure that at least half of the members of the health and safety committee consist of employees and, so far as practicable, health and safety representatives or deputy health and safety representatives? [Occupational Health and Safety Act 2004, Section 72(2)] See protocol for notes. Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
10.35 Does the facility ensure that the health and safety committee meets no less than once every three months? [Occupational Health and Safety Act 2004, Section 72(4)] See protocol for notes. Comments:	☐	☐	☐
Issue Resolution			
10.36 If an issue arises concerning the health and safety of employees at the facility, is the issue resolved according to the procedures agreed upon between the facility and the health and safety committee or representatives, if any? [Occupational Health and Safety Act 2004, Section 73(1)] See protocol for notes. Comments:	☐	☐	☐
10.37 Has the facility notified the employees, any health and safety representative and any health and safety committee, in the appropriate manner and languages, of the following: [Occupational Health and Safety Regulations 2007, Part 2.2.2(1)] – Whether the facility intends to participate in the resolution of an issue or if it will nominate a representative; and – If a representative is to be nominated, the name and position description of that representative? See protocol for notes. Comments:	☐	☐	☐
10.38 Does the facility appoint a management representative for resolving health and safety issues who meets the following requirements: [Occupational Health and Safety Act 2004, Section 73(2)] – Is not a health and safety representative; – Has an appropriate level of seniority; and – Is sufficiently competent? See protocol for notes.	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
Comments:			
10.39 Does the facility ensure that the management representative and the health and safety representative (or any employee nominated to deal with the issue) meet as soon as possible after an issue has been reported, and try to resolve the issue? [Occupational Health and Safety Regulations 2007, Part 2.2.4(1)] See protocol for notes. Comments:			
10.40 If requested to do so by any party involved in the resolution of an issue, does the facility set out in writing, to the satisfaction of all the parties, the details of the issue and all the matters relating to its resolution? [Occupational Health and Safety Regulations 2007, Part 2.2.4(3)] Comments:			
10.41 Does the facility ensure that the details of any written or oral agreement that resolves an issue are brought to the attention of the employees and forwarded to the health and safety committee as soon as reasonably possible after the resolution of an issue? [Occupational Health and Safety Regulations 2007, Part 2.2.4(4)] See protocol for notes. Comments:			
Facility First Aid See protocol for notes.			
10.42 Does the facility, so far as is reasonably practicable, consult with the employees who are (or are likely to be) directly affected and/or with the health and safety representative (if any) regarding first aid needs, training, and changes to any procedures related to first aid? [Compliance Code - First Aid in the Workplace, Section 18]			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
See protocol for notes. Comments:			
10.43 Does the facility provide training on first aid resources at the following intervals: [Compliance Code - First Aid in the Workplace, Section 20 and 21] – As part of an employee's induction training; – If there is a change in the location of first aid facilities; – If there are any changes in the names, locations or contact details of first aid officers; and – At appropriate intervals or as determined by a risk assessment, if the facility chooses Option 2 for addressing first aid compliance (see the notes at the beginning of this subsection)? See protocol for notes. Comments:			
10.44 Does the training discussed in Question 10.43 cover the following topics: [Compliance Code - First Aid in the Workplace, Section 20] – The location of first aid kits; – The names and work locations of trained first aid officers; and – Procedures to be followed when first aid or further assistance is required? Comments:			
10.45 Does the facility implement standard precautions to minimize exposure to blood and bodily fluids, as covered in Appendix F of the Compliance Code - First Aid in the Workplace? [Compliance Code - First Aid in the Workplace, Section 27 and Appendix F] See protocol for notes. Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
10.46 Does the facility offer first aid officers hepatitis B vaccinations, if they are likely to have contact with blood or bodily fluids? [Compliance Code - First Aid in the Workplace, Section 29] Comments:	☐	☐	☐
Incident Notification See protocol for notes.			
10.47 Does the facility notify the Victorian WorkCover Authority immediately after it becomes aware of an incident at the workplace which has resulted in any of the following situations: [Occupational Health and Safety Act 2004, Sections 37(1) and 38(1)] – The death of any person; – A person requiring medical treatment within 48 hours of exposure to a substance; – A person requiring immediate treatment as an in-patient in a hospital; or – A person requiring immediate medical treatment for: – The amputation of any part of his/her body; – A serious head injury; – A serious eye injury; – The separation of his/her skin from underlying tissue (such as de-gloving or scalping); – Electric shock; – Spinal injury; – The loss of a bodily function; and/or – Serious lacerations? See protocol for notes. Comments:	☐	☐	☐
10.48 Does the facility notify the Authority immediately after it becomes aware of an incident which has exposed a person in the immediate vicinity of the incident to an immediate risk to the person's health and safety involving the following types of dangerous occurrences: [Occupational Health and Safety Act 2004, Sections 37(2) and 38(1)] – The collapse, overturning, failure or malfunction of, or damage to, any item of plant listed in Table 11-1 in Section 11.0 of this protocol;	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
– The collapse or failure of an excavation or of any shoring supporting an excavation; – The collapse or partial collapse of any part of a building or structure; – An implosion, explosion or fire; – The escape, spillage or leakage of any substance including dangerous goods; or See protocol for notes. – The fall or release from a height of any plant, substance or object? Comments:			
10.49 Does the facility also submit a written record to the Authority within 48 hours of any incident or dangerous occurrence, in the form approved in writing by the Authority? [Occupational Health and Safety Act 2004, Section 38(3)] Comments:			
10.50 Does the facility ensure that copies of written records are made available for inspection by any of the following persons: [Occupational Health and Safety Act 2004, Section 38(4)] <RECORD KEEPING> – An inspector; – The health and safety representative, if any; – The health and safety committee, if any; – A person, or a representative of a person, injured in the incident or whose health or safety was exposed to immediate risk by the incident; and – A representative of a person whose death was caused by the incident? Comments:			
10.51 If the facility was required to notify the Authority of an incident that has occurred at a workplace, does the facility ensure that the site where it occurred is not disturbed until an inspector arrives at the site, or another time as directed by the inspector? [Occupational Health and Safety Act 2004, Section 39(1)] See protocol for notes. Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
10.52 Does the facility ensure that a copy of each written record of an incident is kept for at least 5 years? [Occupational Health and Safety Act 2004, Section 38(4)] <RECORD KEEPING> Comments:			
Risk Control Measures			
10.53 Does the facility ensure that any risk control measures implemented are properly installed (if applicable), used and maintained? [Occupational Health and Safety Regulations 2007, Part 2.1.1(1)] See protocol for notes. Comments:			
Risk and Security Management Processes			
See protocol for notes.			
10.54 Does the facility include the following in its risk management process: [AS/NZS 4360-2004, Section 2.2] – Communication and consultation with internal and external stakeholders; – Establishment of the context in which risk management processes will take place; – Identification of risks; – Analysis of risks, including consequences and likelihood of risks; – Evaluation of risks, including potential benefits and adverse outcomes of risks; – Treatment of risks through cost-effective strategies and action plans for increasing potential benefits and reducing potential adverse effects; and – Monitoring and review of all steps in the risk management process, particularly of treatment measures? See protocol for notes. Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
10.55 Does the facility conduct a security risk management process that includes the following steps: [HB 167-2006, Section 1.2.1] – Communication and consultation with internal and external stakeholders; – Establishment of the context in which security risk management processes will take place; – Identification of risks (e.g., determine threats, vulnerabilities, possible scenarios, etc.); – Analysis of risks, including existing control systems (e.g., security and emergency systems), consequences and likelihood of risks; – Evaluation of risks, including tolerance for the risks and needs for further treatment of the risks; – Treatment of risk, including the establishment of strategies, accountabilities, responsibilities, and budgets to manage the risks; and – Monitoring and review of all steps in the risk management process, particularly of treatment measures? See protocol for notes. Comments:			
Emergency Management Planning See protocol for notes.			
10.56 Does the facility provide employees with access to a written emergency management plan that clearly explains appropriate responses in case of an emergency, including the controlled movement of people from the workplace? [Compliance Code - Workplace Amenities and Work Environment, Sections 148 and 153] See protocol for notes. Comments:			
10.57 Does the facility provide training for employees, managers and supervisors in implementation of the emergency management plan? [Compliance Code - Workplace Amenities and Work Environment, Sections 148 and 155] Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
10.58 Does the facility conduct regular practice runs of relevant procedures from the emergency management plan? [Compliance Code - Workplace Amenities and Work Environment, Section 155] See protocol for notes. Comments:	☐	☐	☐
10.59 Comments:	☐	☐	☐
10.60 Comments:	☐	☐	☐
10.61 Comments:	☐	☐	☐

To sort QC results, please use the Sort By options

located on the Audit Quick Check Toolbar

Be sure your cursor is within the checklist before using this option.

11.0 EQUIPMENT, MACHINE AND ELECTRICAL SAFETY

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

- I. Steam Boilers and Vessels 11-3
- II. Pressure Vessels 11-5
- III. Welding 11-11

Tables or Appendices referenced in the protocol are located at the end of this section, along with a link to our audit scorecard, entitled [Audit Quick Check](#). This protocol applies to facilities located throughout Indonesia.

Key Legislation and Regulations

Key legislation and regulations covered in this protocol are noted as follows:

- **Steam Regulation of 1930 - Regulations for Implementation of the Steam Ordinance of 1930, September 3, 1930 (Undang-undang tentang Uap No. 225 Tahun 1930; Peraturan Uap tahun), September 3, 1930.** This Regulation provides definitions, equipment design specifications, operating and inspection requirements, and health and safety standards for steam boilers and vessels.
- **Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982 Concerning Pressure Vessels, February 16, 1982 (Peraturan Menteri Tenaga Kerja dan Transmigrasi No.PER/01/MEN/1982 Tentang: Bejana Tekanan), February 16, 1982.** This Regulation specifies requirements for the proper installation, use, storage, filling, and maintenance of pressure vessels. The main purpose of this Regulation is to reduce worker health and safety hazards associated with compressed gases.

- **Minister of Manpower and Transmigration Regulation No. PER.02/MEN/1982 Regarding the Qualification of Welders in Workplaces, March 8, 1982 (Peraturan Menteri Tenaga Kerja No.PER/02/MEN/1982 Tentang Kwalifikasi Juru Las di tempat kerja), March 8, 1982.** This Regulation establishes requirements for welder qualifications in workplaces.

This protocol section updates information contained in the prior version (2009). Specific additions, deletions and other changes made relative to the earlier version of the protocol are summarized in Appendix 11-A.

Topics and Questions

Notes: Currently, Indonesia has no federal legislation directly applicable to machine guarding.

I. Steam Boilers and Vessels

Notes: In this subsection, the following definitions apply: [[Steam Regulation of 1930, Article 2](#)]

- "Pressure vessel" is a vessel wherein steam enters from a boiler, directly or indirectly; however, the following exceptions apply:
 - Connecting steam pipes are not considered to belong to a pressure vessel unless their internal diameter is over 450 millimeters;
 - Cylinders and steam insulators of steam engines are not regarded as pressure vessels; and
 - Steam pipes serving to heat a liquid are not considered part of the pressure vessel;
- "Steam boiler" includes the fire grates, the smoke holes and flues, attachments and all parts serving to ensure the smooth operation of the vessel; and
- "Steam vessel" includes a pre-heater or a super heater (if the vessel is directly connected to a boiler, an evaporator, or a pressure vessel).

- 11.1** Does the facility have a permit issued by the Safety Inspectorate for any steam vessels on the site? [[Steam Regulation of 1930, Articles 4, 6, 8, and 9](#)]

Notes: No permission is necessary for the following equipment: [[Steam Regulation of 1930, Article 7](#)]

- Steam boilers, where the product of the number indicating the heating surface in square meters and the maximum actual pressure in kilograms per square centimeter does not exceed two-tenths, unless this pressure is greater than two atmospheres;
- Pre-heaters, where the internal diameter of the pipes of which they are constructed is 50 millimeters or less;

- Super heaters (not directly connected with the boiler), where the internal diameter of the pipes of which they are constructed is 25 millimeters or less;
- Pressure vessels, not serving to heat liquid under pressure (such as condensation pots, steam accumulators and the like), where the internal diameter is equal to or lesser than 450 millimeters, or where the product of the capacity in cubic decimeters and the steam tension in kilograms per square centimeter does not exceed 600, and for similar steam vessels whose capacity, irrespective of the pressure, is less than 100 decimeters; or
- Pressure vessels serving to heat liquid under pressure (e.g., initial evaporators, sap pre-heaters), where the product referred to in the paragraph above does not exceed 300, and similar pressure vessels with a capacity, irrespective of pressure, of less than 75 cubic decimeters.

11.2 If the facility has steam boilers or steam vessels that require a permit, does it ensure that the permit is readily available for inspection by the Boiler Safety Inspector? [[*Steam Regulation of 1930, Article 35*](#)]

11.3 If a steam vessel has been transferred from the location described in the permit to another location, has the Safety Inspection Engineer been notified within one month of the transfer? [[*Steam Regulation of 1930, Article 46*](#)]

Notes: The facility must notify the Safety Inspection Engineer for the jurisdiction of the vessel's original location.

11.4 Are the facility's steam vessels and all attachments thereof in proper condition, such that: [[*Steam Regulation of 1930, Article 39*](#)]

- For steam boilers and evaporators, replacements are available for the glass pipes of water gauges;
- The pressure in the vessel never exceeds the maximum listed in the permit; and
- The water level in a steam boiler never drops below the mark indicating the lowest permitted water level?

11.5 Are steam vessels operated by persons having appropriate occupational and technical knowledge of this equipment? [[*Steam Regulation of 1930, Article 39*](#)]

Notes: No particular certification or other qualifications are specified in the Regulation.

- 11.6 If a steam vessel has been discovered to be defective, has the user given notice of the defect to the Safety Inspection Engineer who oversees the jurisdiction of the facility? [[Steam Regulation of 1930, Article 39](#)]
- 11.7 Has each of the facility's steam boilers been inspected internally at least once every two years? [[Steam Regulation of 1930, Article 40](#)]
- 11.8 Is a record of each inspection and test of steam vessels and boilers kept, along with the permit? [[Steam Regulation of 1930, Article 45](#)] **<RECORD KEEPING>**

Notes: The results of the inspection and practical measures to ensure equipment safety during further operation of steam vessels and boilers must be mentioned in the permit record.

II. Pressure Vessels

Notes: In this subsection, terms are defined as follows: [[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 1](#)]

- "Director" means the Director in charge of Safety, appointed by the Ministry of Manpower;
- "Elongation" is the increase in length of the test specimen after a fracture occurs, expressed as a percentage of the original length of the test specimen;
- "Inspection" of a pressure vessel is the inspection from the external as well as internal side, with or without the aid of instruments;
- "Pressure vessel" is a vessel other than a steam pressure vessel, which has an internal pressure exceeding the pressure of the outside air and is used for the storage of a gas or a mixture of gas including air, compressed as a liquid in a dissolved or frozen state. A pressure vessel may include:
 - A transport vessel with an air volume exceeding 60 liters, for storage as well as transporting;
 - Air conditioning used to cool any substance where the cooling process takes place internally in the equipment so that the cooling gas has a lower temperature than the surrounding temperature and is able to absorb the heat of the space according to the need; and

- A vessel for storing gas or a mixture of gas that becomes liquid or frozen in a compressed state;
- "Safety devices" are all devices equipped on the vessel for safety use;
- "Safety Inspector" means the technical officer, appointed by the Ministry of Manpower;
- "Tare weight" is the total weight of an empty cylinder including the valve;
- "Tensile strength" is the maximum load (in kg) which can be applied to the test specimen divided by the original orifice (mm²);
- "Testing" is the examination and all steps taken to secure the material strength and construction of a vessel; and
- "Yield point" is the load (in kg) by the lowest yield divided by original orifice of the test specimen (mm²); if the lowest yield is not possible to obtain, then the lowest yield is the load on the tensile strength in kg where the measured length of the test specimen shows fixed elongation over the 0.2% divided by the original orifice of the test specimen.

This Regulation does not apply to vessels with a pressure of less than 2 kg/cm² and/or vessels with a water volume of less than 220 cm³. [[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 1](#)]

Air conditioning and related equipment with a pressure of less than 20 kg/cm² or the parts which are less than 10 liters in volume which can be closed off need only to conform to the requirements of Question [11.18](#), Question [11.19](#), Question [11.21](#), and Question [11.27](#). [[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 3](#)]

General Management of Pressure Vessels

- 11.9** Is each pressure vessel accompanied by the original construction material certificate issued by an independent and recognized body/agency? [[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 6](#)]

Notes: Each material used in the construction of the pressure vessel must have the standard test documents or material certificate. [[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 16](#)]

- 11.10** Does each permanent installation, repair or technical alteration on an approved pressure vessel have a written license from the Director or an appointed official? [[*Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 43*](#)]

Notes: To obtain the written license, the manager must forward an application with the following items:

- Construction drawing of the vessel concerned, which will be installed, repaired, or altered;
- Design drawing for the installation with foundation and other parts or the design drawing for the repairs, technical alterations with explanations of the practices; and
- Data on the qualifications of the workers and technicians who will execute the job of installing, repairing, or altering the vessel.

Design and Safety Features of Pressure Vessels

- 11.11** Are all new pressure vessels of seamless construction, made of rolled steel, and free from lamination or any other surface imperfections or defects, etc.? [[*Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 6*](#)]
- 11.12** Does the facility prohibit welded repairs on new seamless vessels? [[*Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 6*](#)]
- 11.13** Is the stop valve of each transport vessel guarded? [[*Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 8*](#)]
- 11.14** Are all vessels containing gas or a mixture of gases that may develop pressure exceeding the maximum allowable pressure equipped with an automatic safety valve? [[*Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Articles 9\(1\) and 9\(3\)*](#)]
- 11.15** Are all safety devices connected to open drain pipes constructed so that gases and vapors are channeled through the building roof? [[*Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 9*](#)]

11.16 Does each vessel's pressure gauge conform to the following: [\[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 10\]](#)

- Shows a clear and correct extra over-pressure in kg/cm² and a gauge range at least equal to the hydrotest of the vessel;
- Is mounted so that the operator can easily see the dial;
- On the dial of the pressure gauge, a red mark is painted that indicates the maximum allowable working pressure of the vessel; and
- Is provided with a three-way stop valve having a flange diameter of 40 mm and a thickness of 5 mm?

11.17 Are transport vessels fitted with lower support footing to prevent tipping (except when they are being transported or used)? [\[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 12\]](#)

Notes: The support footing must not be connected to the protective cap.

11.18 Do all transport vessels containing compressed, liquefied and dissolved gases comply with the specifications listed in Table 11-1? [\[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 14\]](#)

Notes: For gases or mixtures thereof, which are not mentioned in the table, the value of P(1), P(o), V and N factors are determined by the Director or the appointed official.

Marking of Pressure Vessels

11.19 Does each vessel have the following identity markings: [\[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 22\]](#)

- Name of the owner/company;
- Name and serial number of the manufacturer;
- Name of the gas content (no chemical formula);
- Weight of the steel cylinder without fittings;
- Permitted charging pressure P(o) (kg/cm²);

- Maximum weight of the contents, for liquefied gas pressure vessels;

Notes: For pressure vessels containing dissolved acetylene in acetone, the mark must denote the tare weight, the porous mass and the maximum allowable charge of acetone.

- Volume of water content, for charged pressure vessels;
- Marking of filling material (for steel cylinders of dissolved acetylene); and
- Month and year of the first hydrostatic test and subsequent tests?

Notes: The markings must be applied by a metal stamp on a plate at least 4 mm thick.

- 11.20** Do all pressure vessels filled or in use have a legal "approved - tanda baik yang sah" or "rejected - tanda baik" mark? [[*Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 28*](#)]

Operation and Handling of Pressure Vessels

- 11.21** Are all pressure vessels operating within their allowable working pressure limits? [[*Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 29*](#)]

- 11.22** For transport vessels, does the facility keep a register with at least the following information: [[*Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 33*](#)] **<RECORD KEEPING>**

- Sequence number;
- Manufacturing or sale number;
- Serial number from manufacturer;
- Volume of gas content;
- Water content in liters;
- Date of hydrotest;
- Overpressure of hydrotest (if applicable);

- Results of hydrotest; and
- Name of purchaser, if the transport vessel is sold?

- 11.23** Except when connected to pipes (e.g., for charging), are transport vessels containing liquefied or dissolved flammable or hazardous gases kept in an upright position (to prevent release of the contents)? [\[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 36\]](#)
- 11.24** Do transport vessels that are equipped with a sampling pipe have a sign and/or markings indicating the real flow of gas? [\[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 36\]](#)
- 11.25** Are appropriate handling and transporting equipment and practices used to avoid knocking over or dropping the pressure vessels? [\[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 34\]](#)
- 11.26** Is only one vessel in use at any given time in a work area? [\[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 35\]](#)
- 11.27** During the recharging of pressure vessels containing dissolved acetylene in acetone, is the connecting side of the reducing valve appropriately sealed off? [\[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 34\]](#)

Storage of Pressure Vessels

- 11.28** Regarding the temporary or long-term storage of vessels, are the following requirements enforced: [\[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 35\]](#)
- No vessel is left near ladders, stairs, aisles, ventilation windows, hoisting equipment, and moving parts of machinery;
 - Transport vessels are not stored with other vessels containing flammable gases;
 - Transport vessels containing flammable gases are stored in rooms with fire resistant walls;
 - Transport vessels containing various gases are segregated for storage by type of gas;

- Transport vessels stored outdoors are protected against direct rays of the sun; and
- Vessels with a pressure greater than the external pressure are not stored in underground rooms?

Inspections

- 11.29** Have all pressure vessels been inspected at least every 5 years? [*Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 14*]

Notes: During the first inspection, the pressure vessel must be hydrotested. [*Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 15*]

During periodic reinspections, the vessel need not be hydro-tested with water if external and internal inspections indicate the vessel is in good condition. [*Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 15*]

After the satisfactory inspection of each pressure vessel, the inspector in charge must mark his approval with the following particulars, e.g., regional code number, month, and year of the testing. [*Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 18*]

III. Welding

- 11.30** If welding is performed in the facility, does each welder have a current welding certificate issued by the Director of Safety? [*Minister of Manpower and Transmigration Regulation No. PER.02/MEN/1982, Article 3*]

Notes: A certified welder is considered unqualified if he or she has not performed the duties stated in his or her welding certificate for 6 months or longer. [*Minister of Manpower and Transmigration Regulation No. PER.02/MEN/1982, Article 3*]

- 11.31** If welding is performed at the facility, does each welder perform duties within the limits stated in his or her welding certificate? [\[Minister of Manpower and Transmigration Regulation No. PER.02/MEN/1982, Article 5\]](#)

Notes: Welders are classified as First Class, Second Class, or Third Class. First Class welders are allowed to perform welding jobs in lieu of Second and Third Class welders. Second Class welders are allowed to perform welding jobs in lieu of Third Class welders, but are prohibited from working as First Class welders. Third Class welders are prohibited from performing welding for either Second or First Class jobs. [\[Minister of Manpower and Transmigration Regulation No. PER.02/MEN/1982, Article 6\]](#)

Table 11-1**Transport Vessels**

Name of Gas	Condition	P(1)	P(o)	V	N
Acetylene gas	Dissolved in acetone	60	15	-	5
Ethylamine	Liquefied	10	-	1.70	5
Ethane	Liquefied	95	-	3.30	5
Ethylene	Liquefied	225	-	3.50	5
Ethylene oxide	Liquefied	10	-	1.3	5
Ammonia	Dissolved in water	30	-	1.86	5
Ammonia in water with 30-40% weight	Dissolved in water	4	-	1.25	5
Ammonia in water with 40-50% weight	Dissolved in water	9	-	1.3	5
Bromoflouride	Compressed	225	150	-	5
Bromomethane	Liquefied	10	-	0.70	5
Chlorine	Liquefied	22	-	0.80	2
Chloroethylene	Liquefied	10	-	1.25	5
Chlorocarbamide	Liquefied	15	-	0.80	2
Methyl chloride	Liquefied	16	-	1.25	5
Hydrogen chloride	Liquefied	110	-	1.50	2
Noble gases	Compressed	125	150	-	5
Freon (dichloro difloromethane)	Liquefied	13	-	0.89	5
Gas mixture (oil gases with 30% acetylene max)	Compressed	15	10	-	5
Carbon monoxide	Compressed	30	20	-	5
Carbon dioxide	Liquefied	250	-	1.50	5
Coal gas/illuminating gas	Compressed	225	150	-	2
Air	Compressed	25	150	-	5
Mixture: a. air and noble gas b. nitrogen and noble gas c. oxygen and argon	Compressed Compressed Compressed	225 225 225	150 150 150	- - -	5 5 5
Methane	Compressed	225	150	-	5
Methylamine	Liquefied	14	-	1.70	5
Methylether	Liquefied	10	-	1.65	2
Oil gas	Compressed	200	125	-	5
Oil gas	Liquefied	190	-	2.50	5

Name of Gas	Condition	P(1)	P(o)	V	N
Propylene oil gas	Liquefied	35	-	2.25	5
Nitrogen	Compressed	225	150	-	5
Nitrogen monoxide	Liquefied	250	-	1.50	5
Nitrogen tetraoxide	Liquefied	22	-	0.80	5
Ethylene oxide	Liquefied	11	-	1.26	5
Vinyl chloride	Liquefied	11	-	1.26	5
Vinyl methyl ethane	Liquefied	10	-	1.50	5
Water gas	Compressed	225	150	-	5
Hydrogen	Compressed	225	150	-	5
Sulfur dioxide	Compressed	12	-	0.80	2
Hydrogen sulfide	Compressed	45	-	1.45	2
Oxygen	Compressed	225	150	-	5
Key: P(1) = hydrotest pressure in kg/cm ² (over pressure) P(o) = allowable working pressure in kg/cm ² (over pressure) V = required volume in cylinder (m ³ per kg of gas dissolved of compressed) N = maximum periodic test interval (yrs)					

Source: Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Table.

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is provided for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter format does not contain the electronic links and other functionality contained in the MS Word version. The following instructions pertain to the fully linked Word version of the AQC.

Each question from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, electronic links back to the original protocol document are provided for quick access to this information when needed. To return to where you were in the AQC after following a link, use the back arrow located on the Audit Quick Check Toolbar.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X’s to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

Additional audit questions can be added to the end of the AQC. Examples might include corporate requirements or best management practices. To add more questions, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Continue to sequentially number the questions by putting your cursor in the first column and typing the desired number.

Please Note: Additional rows will be included in the sort function. It is important that you number the questions for the sort functions to work. Please consider the following sort rules when entering custom text.

Sorting Responses

The AQC sort feature is accessed from the IAPC menu item located on the far right on the Main MS Toolbar. Please note the following criteria to take full advantage of this feature.

You can change the column titles as you see fit, but the menus assume that:

- the first column contains the question number and question text;
- the second column is "Not Applicable" (N/A) entries;
- the third column is "Complies" entries; and
- the fourth column is "Does Not Comply" entries.

A question is considered "Complies" if there is any text ("X" or "YES", for instance) in the "Complies" column.

A question is considered "Incomplete" if columns 2 to 4 are all empty.

Only one column should contain a value for any given question.

Click the IAPC menu item and then select one of the following menu choices:

Sort by Question Number

- Sorts the section by question number

Sort with Incomplete first

- Sorts the section with Incomplete first, Does Not Comply next, Complies next, then N/A

Sort with Non-compliant first

- Sorts the section with Does Not Comply first, Complies next, N/A next, then Incomplete

Sort with Compliant first

- Sort the section with Complies items first, Does Not Comply next, N/A next, then Incomplete

Sort with Not Applicable last

- Sort the section with not-applicable items last (Complies first, Does Not Comply next, Incomplete next, then N/A)

For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click the IAPC menu item and choose "Sort with Non-compliant first". Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

Once the completed AQC is sorted, save or print a copy of the results. The AQC can then be re-sorted using a different option.

SECTION 11.0 EQUIPMENT, MACHINE AND ELECTRICAL SAFETY

AUDIT QUICK CHECK

SITE: _____ DATE: _____
 ASSESSOR: _____

	Not Applicable	Complies	Does Not Comply
Q11.1 Does the facility have a permit issued by the Safety Inspectorate for any steam vessels on the site? [<i>Steam Regulation of 1930, Articles 4, 6, 8, and 9</i>] See protocol for notes. I. Steam Boilers and Vessels Comments:			
Q11.2 If the facility has steam boilers or steam vessels that require a permit, does it ensure that the permit is readily available for inspection by the Boiler Safety Inspector? [<i>Steam Regulation of 1930, Article 35</i>] I. Steam Boilers and Vessels Comments:			
Q11.3 If a steam vessel has been transferred from the location described in the permit to another location, has the Safety Inspection Engineer been notified within one month of the transfer? [<i>Steam Regulation of 1930, Article 46</i>] See protocol for notes. I. Steam Boilers and Vessels Comments:			

	Not Applicable	Complies	Does Not Comply
Q11.4 Are the facility's steam vessels and all attachments thereof in proper condition, such that: [<i>Steam Regulation of 1930, Article 39</i>] – For steam boilers and evaporators, replacements are available for the glass pipes of water gauges; – The pressure in the vessel never exceeds the maximum listed in the permit; and – The water level in a steam boiler never drops below the mark indicating the lowest permitted water level? I. Steam Boilers and Vessels Comments:			
Q11.5 Are steam vessels operated by persons having appropriate occupational and technical knowledge of this equipment? [<i>Steam Regulation of 1930, Article 39</i>] See protocol for notes. I. Steam Boilers and Vessels Comments:			
Q11.6 If a steam vessel has been discovered to be defective, has the user given notice of the defect to the Safety Inspection Engineer who oversees the jurisdiction of the facility? [<i>Steam Regulation of 1930, Article 39</i>] I. Steam Boilers and Vessels Comments:			

	Not Applicable	Complies	Does Not Comply
Q11.7 Has each of the facility's steam boilers been inspected internally at least once every two years? [<i>Steam Regulation of 1930, Article 40</i>] I. Steam Boilers and Vessels Comments:			
Q11.8 Is a record of each inspection and test of steam vessels and boilers kept, along with the permit? [<i>Steam Regulation of 1930, Article 45</i>] <RECORD KEEPING> See protocol for notes. I. Steam Boilers and Vessels Comments:			
Q11.9 Is each pressure vessel accompanied by the original construction material certificate issued by an independent and recognized body/agency? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 6</i>] See protocol for notes. II. Pressure Vessels Comments:			

		Not Applicable	Complies	Does Not Comply
Q11.10	Does each permanent installation, repair or technical alteration on an approved pressure vessel have a written license from the Director or an appointed official? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 43</i>] See protocol for notes. II. Pressure Vessels Comments:			
Q11.11	Are all new pressure vessels of seamless construction, made of rolled steel, and free from lamination or any other surface imperfections or defects, etc.? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 6</i>] II. Pressure Vessels Comments:			
Q11.12	Does the facility prohibit welded repairs on new seamless vessels? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 6</i>] II. Pressure Vessels Comments:			
Q11.13	Is the stop valve of each transport vessel guarded? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 8</i>] II. Pressure Vessels Comments:			

		Not Applicable	Complies	Does Not Comply
Q11.14 Are all vessels containing gas or a mixture of gases that may develop pressure exceeding the maximum allowable pressure equipped with an automatic safety valve? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Articles 9(1) and 9(3)</i>] II. Pressure Vessels Comments:				
Q11.15 Are all safety devices connected to open drain pipes constructed so that gases and vapors are channeled through the building roof? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 9</i>] II. Pressure Vessels Comments:				
Q11.16 Does each vessel's pressure gauge conform to the following: [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 10</i>] – Shows a clear and correct extra over-pressure in kg/cm² and a gauge range at least equal to the hydrotest of the vessel; – Is mounted so that the operator can easily see the dial; – On the dial of the pressure gauge, a red mark is painted that indicates the maximum allowable working pressure of the vessel; and – Is provided with a three-way stop valve having a flange diameter of 40 mm and a thickness of 5 mm? II. Pressure Vessels Comments:				

		Not Applicable	Complies	Does Not Comply
Q11.17	Are transport vessels fitted with lower support footing to prevent tipping (except when they are being transported or used)? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 12</i>] See protocol for notes. II. Pressure Vessels Comments:			
Q11.18	Do all transport vessels containing compressed, liquefied and dissolved gases comply with the specifications listed in Table 11-1? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 14</i>] See protocol for notes. II. Pressure Vessels Comments:			

	Not Applicable	Complies	Does Not Comply
Q11.19 Does each vessel have the following identity markings: <i>[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 22]</i> – Name of the owner/company; – Name and serial number of the manufacturer; – Name of the gas content (no chemical formula); – Weight of the steel cylinder without fittings; – Permitted charging pressure P(o) (kg/cm²); – Maximum weight of the contents, for liquefied gas pressure vessels; See protocol for notes. – Volume of water content, for charged pressure vessels; – Marking of filling material (for steel cylinders of dissolved acetylene); and – Month and year of the first hydrostatic test and subsequent tests? See protocol for notes. II. Pressure Vessels Comments:			
Q11.20 Do all pressure vessels filled or in use have a legal "approved - tanda baik yang sah" or "rejected - tanda baik" mark? <i>[Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 28]</i> II. Pressure Vessels Comments:			

	Not Applicable	Complies	Does Not Comply
Q11.21 Are all pressure vessels operating within their allowable working pressure limits? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 29</i>] II. Pressure Vessels Comments:			
Q11.22 For transport vessels, does the facility keep a register with at least the following information: [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 33</i>] <RECORD KEEPING> – Sequence number; – Manufacturing or sale number; – Serial number from manufacturer; – Volume of gas content; – Water content in liters; – Date of hydrotest; – Overpressure of hydrotest (if applicable); – Results of hydrotest; and – Name of purchaser, if the transport vessel is sold? II. Pressure Vessels Comments:			

	Not Applicable	Complies	Does Not Comply
Q11.23 Except when connected to pipes (e.g., for charging), are transport vessels containing liquefied or dissolved flammable or hazardous gases kept in an upright position (to prevent release of the contents)? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 36</i>] II. Pressure Vessels Comments:			
Q11.24 Do transport vessels that are equipped with a sampling pipe have a sign and/or markings indicating the real flow of gas? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 36</i>] II. Pressure Vessels Comments:			
Q11.25 Are appropriate handling and transporting equipment and practices used to avoid knocking over or dropping the pressure vessels? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 34</i>] II. Pressure Vessels Comments:			
Q11.26 Is only one vessel in use at any given time in a work area? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 35</i>] II. Pressure Vessels Comments:			

	Not Applicable	Complies	Does Not Comply
Q11.27 During the recharging of pressure vessels containing dissolved acetylene in acetone, is the connecting side of the reducing valve appropriately sealed off? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 34</i>] II. Pressure Vessels Comments:			
Q11.28 Regarding the temporary or long-term storage of vessels, are the following requirements enforced: [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 35</i>] – No vessel is left near ladders, stairs, aisles, ventilation windows, hoisting equipment, and moving parts of machinery; – Transport vessels are not stored with other vessels containing flammable gases; – Transport vessels containing flammable gases are stored in rooms with fire resistant walls; – Transport vessels containing various gases are segregated for storage by type of gas; – Transport vessels stored outdoors are protected against direct rays of the sun; and – Vessels with a pressure greater than the external pressure are not stored in underground rooms? II. Pressure Vessels Comments:			

	Not Applicable	Complies	Does Not Comply
Q11.29 Have all pressure vessels been inspected at least every 5 years? [<i>Minister of Manpower and Transmigration Regulation No. PER.01/MEN/1982, Article 14</i>] See protocol for notes. II. Pressure Vessels Comments:			
Q11.30 If welding is performed in the facility, does each welder have a current welding certificate issued by the Director of Safety? [<i>Minister of Manpower and Transmigration Regulation No. PER.02/MEN/1982, Article 3</i>] See protocol for notes. III. Welding Comments:			
Q11.31 If welding is performed at the facility, does each welder perform duties within the limits stated in his or her welding certificate? [<i>Minister of Manpower and Transmigration Regulation No. PER.02/MEN/1982, Article 5</i>] See protocol for notes. III. Welding Comments:			

12.0 MATERIAL HANDLING AND GENERAL IN-PLANT SAFETY

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

– General	12-3
– Traffic Routes, Danger Areas, Floors and Passageways	12-3
– Stairs	12-6
– Ladders	12-7
– Mobile and Aerial Ladders	12-10
– Mobile or Suspended Scaffolding	12-11
– Manual Handling of Loads	12-16
– Transport of Material on Rails	12-17
– Overhead Cranes and Hoists and Other Lifting Equipment	12-19
– Confined Spaces	12-32
– Tanks and Vessels	12-34
– Specialized Work Equipment	12-35
– Health and Safety Signs	12-35

Appendices referenced in the protocol are located at the end of this section, along with our audit scorecard, entitled Audit Quick Check. This protocol applies to facilities located throughout Italy.

Italian legislation is not widely available in current form except through subscription services. Health and safety legislation is available for subscription from the Ministry of Labor at: <http://www.lavoroeambiente.it/> (last accessed in June 2009).

Key legislation and regulations covered in this protocol are noted as follows:

- **Circular Memorandum No. 18752 of 28 March 2007, Mobile Cranes - Risk of Improper Use of the Device to Bypass the Load or Time Limiting System** (Circolare No.18752 of 28 marzo 2007, Gru mobili - Rischio di uso improprio del dispositivo di bypass del limitatore di carico o di momento) (*Circular Memorandum No. 18752 of 28 March 2007*). This Circular Memorandum requires adequate measures be taken to prevent the risk of abuse while using the by-pass of the load limiting device of mobile cranes.
- **Legislative Decree No. 81 of 9 April 2008, Implementation of Article 1 of Law No. 123 of 3 August 2007, On the Protection of Health and Safety in the Workplace** (Decreto Legislativo No. 81 del 09/04/2008 Attuazione dell'articolo 1 della legge 3 agosto 2007, n. 123, in materia di tutela della salute e della sicurezza nei luoghi di lavoro) (*Legislative Decree No. 81 of 9 April 2008, as amended through Law No. 14 of 27 February 2009*). This Legislative Decree repeals and reincorporates the requirements of the former *Presidential Decree No. 547 of 27 April 1955, Presidential Decree No. 303 of 19 March 1956 and Legislative Decree No. 626 of 19 September 1994*. It provides most of the comprehensive workplace safety and health requirements under *Law No. 123 of 3 August 2007*.

This protocol section updates information contained in the prior version (2007). Specific additions, deletions and other changes made relative to the earlier version of the protocol are summarized in Appendix 12-A.

Material Handling and General In-Plant Safety

Notes: Annex V of Legislative Decree No. 81 of 9 April 2009 provides basic requirements for safety and protection of workers, which are indicated as applicable to equipment and machinery that was not subject to the conformity standards of Legislative Decree No. 459 of 24 July 1996, or not subject at the time the equipment was placed on the market. The CE marking guarantees that the marked equipment or machinery is in compliance with the minimum safety requirements set by the Legislative Decree No. 459 of 24 July 1996. However, the employer's duty under Legislative Decree No. 81 of 9 April 2009, Article 71, is to ensure equipment is safe for workers, considering also the activities performed with such equipment and the workplace where the equipment is located. Therefore, the requirements of Annex V are presented in this protocol in subsections with general applicability.

General

- 12.1** Are facility buildings that house a workplace or structure for work designed and built so that they are appropriate to their type of use, and are they adequately maintained? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.1.1 and 1.1.2]*
- 12.2** Is access for normal maintenance work and repairs to tall buildings, parts of plant, equipment, machinery, poles, etc., made safe and easy through the use of appropriate means, such walkways, ladders, brackets, crampons to climb piles, or other appropriate devices? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.1.5]*
- 12.3** Are the metal structures of buildings and temporary works and large outdoor metal receptacles and appliances, either themselves or through appropriate means, electrically grounded in order to ensure dispersal of atmospheric discharges? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.1.8]*

Traffic Routes, Danger Areas, Floors and Passageways

- 12.4** Are the following requirements with respect to traffic routes, danger areas, floors and passageways met: *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV 1.4.1 through 1.4.8]*
- Traffic routes, including stairs, fixed ladders and loading bays and ramps, are located and calculated in a manner that allows pedestrians or vehicles to use them easily and safely, for their intended use, and in a manner that does not endanger the workers employed in the vicinity of those traffic routes;
 - The facility's calculation of the dimensions of traffic routes for pedestrians and/or goods are based on the potential number of users and the type of company;

- When means of transport are used on traffic routes, a sufficient safety clearance is provided for pedestrians;
- Sufficient clearance is allowed between vehicle traffic routes and doors, gates, passages for pedestrians, corridors and stairs;
- Traffic routes are clearly identified, based on their routes and use;
- If the workplaces contain danger areas that pose risks to the workers or that may expose workers to falling objects, the places are equipped with barriers that prevent unauthorized workers from entering those areas; and
- Appropriate measures are taken to protect workers authorized to enter danger zones?

Notes: The above requirements are also applicable to principle routes on the facility grounds, routes leading to fixed workplaces, work routes used for regular maintenance and surveillance of the plant, and to loading bays. The requirements are also applicable to off-site workplaces and outdoor work areas. [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.8.4] and

[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.8.5]

12.5 Are the following requirements with respect to traffic routes, danger areas, floors and passageways met: *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.4.8 through 1.4.11]*

- Danger areas are clearly indicated;
- The floors of work areas and places intended for passage have no dangerous bumps or holes and are in a condition so that movement and traffic by persons or means of transport is safe;
- Floors and passageways are not cluttered by materials which block the normal traffic flow; and
- When, for obvious technical reasons it is not possible to completely eliminate from the traffic areas all of the fixed or mobile obstacles which might constitute a danger to workers or vehicles, the obstacles are properly marked?

- 12.6** If a floor area within the facility is designated for material storage, has the facility clearly marked the maximum floor load on the wall or in another conspicuous place? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.1]*

Notes: The maximum floor load is usually expressed in kilograms per square meter of surface area (kg/m²).

- 12.7** In places designated for material storage, does the facility ensure that the following requirements are met: *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.1.4]*

- Loads do not exceed the maximum indicated load; and
- Loads are reasonably distributed to ensure stability?

- 12.8** Where possible, has the facility provided solid covers or railings around every floor or wall opening that are capable of preventing persons from falling? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.5.14.1]*

- 12.9** If it is not possible to provide solid covers or railings around every floor or wall opening as in Question 12.8, has the facility provided hazard signs that inform persons of the danger? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.5.14.1]*

- 12.10** If the facility has any wall openings that permit the passage of persons or that present a danger of falling due to a difference in level of more than one meter, has it provided a solid barrier or a standard railing to mitigate the danger? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.5.14.2]*

Notes: A "standard railing" is one that is equipped as follows: [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.2]

- *Constructed of sturdy, strong material and is in good repair;*
- *Has a useful height of at least one meter;*
- *Constructed with at least two rails, with one at the midpoint between the floor and the top rail; and*
- *Constructed and attached so as to resist the maximum stress that it can undergo, overall and in all its parts, giving due consideration to weather and the railing's intended purpose.*

For window openings, railings are permitted with a height of less than 90 cm when, in relation to work performed in the room, this does not present a hazardous condition. [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.5.14.3]

- 12.11** If the facility utilizes scaffolding, runways, platforms, access ramps, balconies and elevated working or traffic areas, does it ensure that these surfaces are guarded by standard railings or standard railings with toe boards on all open sides? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.3]*

Notes: Such protection is not required for loading platforms less than 1.5 meters in height. [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.3]

A "standard railing with toe board" means a standard railing equipped with a 15 centimeter band attached to the walking surface. [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.2.2]

- 12.12** Are the following requirements met with respect to the general condition of workplaces inside the facility: *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.3.2]*

- Floors have no dangerous bumps, holes or slopes and are fixed, stable and not slippery;
- Where putrescible materials or liquids are normally poured, the floors have a solid and impermeable surface and have sufficient slope to cause the liquids to drain quickly toward the collection and discharge point; and
- When the floor of workstations or passageways is consistently wet, it is permanently covered with pallets or grating if the workers are not supplied with suitable waterproof footwear?

- 12.13** Does the facility ensure that workstations and passageways are protected against the possible fall of, or collision with, materials associated with the work activity? *[Legislative Decree No. 81 of 9 April 2008, Article 6 and Annex IV, 1.8.1]*

- 12.14** If fall protection using technical means is not possible, are other precautions taken? *[Legislative Decree No. 81 of 9 April 2008, Article 63, Annex IV, 1.8.2]*

Stairs

- 12.15** Does the facility ensure that each fixed stairway is equipped with treads and risers in accordance with best professional practice and that widths are adequate for traffic needs? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.1]*

- 12.16** Does the facility ensure that all fixed stairs and their landings are guarded by standard railings or other equivalent protection on all open sides? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.2]*
- 12.17** If the facility has a flight of fixed stairs located between two walls, does the facility ensure that the stairs are provided with at least one hand rail? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.2]*

Ladders

Notes: Portable ladders which are in compliance with requirements set forth in Annex XX of Legislative Decree No. 81 of 9 April 2008 are not required to be in compliance with the requirements set forth by Article 113(3), (8) and (9); (see Question 12.22, Question 12.26 and Question 12.27). [Legislative Decree No. 81 of 9 April 2008, Article 113(10)]

Portable ladders in compliance with Annex XX are ladders that are: [Legislative Decree No. 81 of 9 April 2008, Annex XX]

- *Constructed according to standard UNI EN 131 Part 1a and Part 2; or*
- *Ladders that have received certification from one of the following:*
 - *An ISPESL laboratory;*
 - *A laboratory of a state university or polytechnic institute;*
 - *A laboratory of a state technical college;*
 - *Another laboratory approved by the Ministry of Labor and Social Policy; or*
 - *A laboratory approved by another European Union or European Economic Area Agreement Member State.*

- 12.18** Does the facility ensure that all fixed ladders of more than five meters in height that are fixed to walls or vertical structures, or that are at a pitch exceeding 75 degrees, are provided with a solid metal protective cage with screens or openings of sufficient width to prevent accidental falls backwards from 2.5 meters above the ground or floor level? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.3]*
- 12.19** Does the facility ensure that the cages provided on fixed ladders are not more than 60 centimeters from the ladder? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.4]*
- 12.20** Does the facility ensure that the rungs of fixed ladders are at least 15 centimeters from the wall to which they are attached, or to which the ladder of which they are a part is attached? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.5]*

12.21 If it is not possible to provide fixed ladders with a protective cage, has the facility adopted other safety measures that will prevent persons from falling from more than one meter in height? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.6]*

12.22 Does the facility ensure that portable (hand) ladders are constructed of materials suitable to the conditions of use and are equipped as follows: *[Legislative Decree No. 81 of 9 April 2008, Article 113(3-4)]*

- Non-slip devices are located on the bottoms (feet) of both side rails;
- Hooks or non-slip supports are located on the tops as necessary to ensure the stability of the ladders; and
- If the ladders are made of wood, rungs are attached to the side rails by means of fixed joints?

Notes: If the portable ladders are secured at the upper ends (including ladders on rails), they are not required to have non-slip devices on their bottoms and tops. [Legislative Decree No. 81 of 9 April 2008, Article 113(4)]

12.23 If the use of stairs involves a risk of slipping because of their height or other reasons, are they properly secured or held at the foot by another person? *[Legislative Decree No. 81 of 9 April 2008, Article 113(5)]*

12.24 Does the facility ensure that ladders are placed so as to ensure their stability during use, in accordance with the following criteria: *[Legislative Decree No. 81 of 9 April 2008, Article 113(6)]*

- Portable ladders rest on a stable, strong, suitably-sized, immobile footing so that the rungs are horizontal;
- Suspended ladders are attached in a secure manner and, except for rope ladders, so as to prevent movement or swinging;
- Slipping of the foot or top of ladders during their use is prevented by fixing the top or bottom of the uprights, or using an anti-slip device, or by any other means of equivalent effectiveness;
- Ladders used for access are long enough to protrude sufficiently beyond the access point, unless other arrangements ensure a secure grip;

- Extension ladders are assembled so that the extensions are firmly attached to each other; and
- Ladders are placed securely and steadied before anyone ascends them?

12.25 Does the facility ensure that ladders available to workers are at all times sturdy and safe, and that transport of materials by hand does not compromise safety? *[Legislative Decree No. 81 of 9 April 2008, Article 113(7)]*

12.26 If the facility utilizes portable extension ladders, does it ensure that the ladders are designed and used in accordance with the following: *[Legislative Decree No. 81 of 9 April 2008, Article 113(8)]*

- The ladders are not longer than 15 meters, except where there are special requirements, in which case the top ends of the side rails are affixed to stationary parts;
- Ladders that are longer than 8 meters are equipped with spreaders so as to minimize deflection;
- Workers do not remain on the ladders when they are being moved sideways;
- During use, the ladder is supervised at all times; and
- During particularly hazardous activities, a person exercises continuous supervision of the ladder from the ground?

12.27 If the facility utilizes step ladders, does it ensure the following: *[Legislative Decree No. 81 of 9 April 2008, Article 113(9)]*

- The ladders are not more than 5 meters in height; and
- The ladders are provided with a substantial chain or other device to prevent the ladder from opening beyond the safe limit?

12.28 When performing work on ladders or platforms, does the facility ensure that all hand tools are kept in cases or are fastened so that they will not fall? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex VI, 1.7]*

Mobile and Aerial Ladders

12.29 If the facility uses cart-based aerial ladders, does it ensure that the following requirements are met: *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.3.1]*

- The cart holding an aerial ladder is placed on a resistant horizontal base, so that the symmetry plane of the ladder is vertical, as checked using a plumb line placed on the rear of the cart itself;
- The aerial ladder is not used at an angle of less than 60 degrees or more than 80 degrees to the horizontal;

Notes: The gradient must be controlled using a lead weight attached to the first section of the ladder. [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.3.1]

- Each part of the ladder is sequentially numbered according to its order of assembly; and
- Before assembling the ladder, strong double chocks are applied to each wheel, connected with chains or links?

12.30 If the facility uses aerial ladders, does it ensure the following with respect to their safe movement: *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.3.2]*

- All moving and positioning operations are undertaken when the ladder is unloaded;
- When mounting the ladder, shaking is avoided;
- Workers climbing the ladder remain on the median line of the ladder and limit any load they carry to 20 kg when the ladder is fully extended;
- The number of people using the ladder at the same time does not exceed the maximum specified in the testing report for the ladder;
- All activities by workers on the top of the ladder involving pushing or pulling are prohibited;
- The top of the ladder is not leaned against fixed structures; and

- When it is necessary to move an aerial ladder next to electric lines, it is lowered sufficiently to avoid contact?

Mobile or Suspended Scaffolding

12.31 If the facility uses a suspended platform, are the following requirements met: *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.1]*

- Light suspended platforms are not used for loads (including the worker) greater than 100 kg per meter of length, and are not wider than 1 meter;

Notes: Light suspended platforms are those that have a single suspension line and maneuvering winch at each end. [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.1]

- No more than two people are allowed on a light platform at the same time;
- Light platforms are only used for finishing or maintenance activities, or other activities of limited scope;

Notes: "Limited scope" is not defined.

- Heavy suspended platforms, having four suspension ropes and four maneuvering winches, are not wider than 1.5 meters;
- Single units of heavy suspended platforms connected and forming a continuous bridge are placed at the same level;
- The number of people allowed at the same time on a heavy suspended platform is limited to the maximum indicated on the label for the scaffolding; and
- The winches for each suspended platform unit are of the same type and the same load-bearing capacity?

12.32 If the facility uses suspended platforms, does it ensure the following with respect to the support structure of the platforms: *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.2]*

- The platform unit consists of two exterior metal frames, connected by horizontal beams supporting cross-beams which, in turn, support wooden planks;

- The two metal frames are mounted at a distance not greater than 3 meters;
- The horizontal beams connecting the frames extend beyond the edges of the frames by 50 cm, and are equipped with safety systems to prevent their release from the metal frames;
- The walkway of the platform consists of boards having a minimum thickness of 4 cm that are positioned close to each other, safeguarded against shifting, and the timber of the board has longitudinal, straight grain without wood knots;

Notes: The wooden elements may be substituted by metal elements of equal strength. [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.2]

“Very close” is not defined in the Decree.

- The connection between more than one heavy platform unit is by direct connection between adjacent units, with no connecting walkways; and
- Bolts used in assembly are safeguarded by elastic washers and with counter bolts?

12.33 If the facility uses suspended platforms, does it ensure the following requirements are met with respect to the railings: *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.3]*

- The exposed sides of the platforms are provided with railings and toe boards;
- The top rung of the external rail of light platforms consists of an iron tubing 4 cm in diameter (other rungs may be comprised of wood);
- The vertical open space between the toe board and the first rung, and between the first rung and the rung above, is not greater than 30 cm;
- The components of the railing are solidly attached to the internal part of the vertical support of the platform, in correspondence with the winches; and
- On heavy platforms, a toe board is constructed along the side adjacent to the structure that has no railing, with a height not less than 5 cm?

12.34 If the facility uses suspended platforms, do the winches operating the suspended structures meet the following requirements: *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.4]*

- Are rigidly connected to the suspension framework;
- Have automatic brakes for falls and have an automatic stopping system drum;
- The reel is made of steel and has lateral flanges of a diameter equal to two diameters of the rope when the line is completely reeled;
- The diameter of the reel is not less than 12 times the diameter of the rope;
- The component parts of the winch which are subject to dynamic movement have a safety coefficient of not less than 8;
- Have a metal label, located in a visible location, that indicates the maximum load, and the number of persons allowed with reference to the specific winch; and
- The label on each winch indicates the manufacturing firm, the year of manufacture and the serial number?

12.35 If the facility uses suspended platforms, do the lines or ropes supporting the suspended structures meet the following requirements: *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.45]*

- Ropes are of flexible material, made with braided wires, with a breaking load not less than 120 kg per mm², and not greater than 160 kg per mm², with a safety coefficient not lower than 10;
- The cables and the component wires are protected against corrosive external agents by greasing;
- The attachment to the winch reel is soldered so as to prevent release; and
- The attachment to the support board of the suspended platform is done by closing the end of the cable, folded into an eyelet with the cable ends intertwined, with not less than three terminal bolts, and an appropriate mechanism for distributing the pressure on the suspension hook or ring is inserted into the eyelet?

12.36 If the facility uses suspended platforms, does it ensure that the supporting beams of the platforms meet the following requirements: *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.6]*

- Supporting beams are made of sectional steel with a safety coefficient of not less than 6, calculated for each installation;
- Support beams are laid on sturdy structures and materials;
- Support beams extend toward the inside of the building by not less than twice the free projected length;
- Support beams are securely anchored to components of established strength, ensuring a distribution of loads appropriate to prevent any movement;
- The support beams are not anchored by weights; and
- The connecting rings or hooks of the cable to the support beam have a safety coefficient of not less than 6, and are fixed so as to avoid slipping along the beam to the exterior?

12.37 If the facility uses suspended platforms, does it ensure that access to and exit from the platform is appropriate to the conditions of use and employs a means to ensure safe transfer and movement? *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.7]*

Notes: For heavy platforms with connected units, ladders may be used if both the platforms and the ladders are anchored. [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.7]

12.38 If the facility uses suspended platforms, does it take the following precautions to ensure stability: *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.8]*

- At each level of work, suspended platforms are anchored to stable points of the construction structure;
- The distance of the boards of heavy platforms from the construction wall does not exceed 10 cm;

Notes: Where such a distance cannot be achieved because of the nature of the construction, the remaining space must be protected up to 10 cm from the

building. [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.8]

- The suspended platforms are never used as lifts, and no lift-type equipment is installed on them; and
- On light platforms, the attachment point of the suspension cables is situated at a height of at least 1.5 meters from the platform walkway?

12.39 If the facility uses suspended platforms or bridges, does it take the following precautions to ensure maneuverability of the platforms: *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.9]*

- Before lowering or raising the platform, it is determined that there are no obstacles to movement, and no overloading of material;
- During movement of the winch, at least two turns of the cable remain coiled on the cable reel;
- The movement is simultaneous on the two winches for light platforms; and
- For heavy platforms, the movement of winches at each end is simultaneous for that end, proceeding with subsequent winch movements which do not cause the platform to slope by more than 10%?

12.40 If the facility uses suspended platforms or scaffolding, does it ensure the following with respect to the suspended equipment: *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.10]*

- The platforms are subject to constant maintenance and upkeep;

Notes: "Constant maintenance and upkeep" is not defined.

- Platform ropes and winches are routinely oiled;
- Platform ropes are replaced when, along any length of rope corresponding to four times the helix pattern of the rope, the number of obvious broken rope filaments is over 10% of the filaments making up the rope; and
- Platform winches are tested before use and undergo biennial inspections?

Manual Handling of Loads

Notes: The term "manual handling of loads" means activities involving the transporting or supporting of a load by one or more workers, including the lifting, putting down, pushing, pulling, carrying or moving of a load which, due to its characteristics or as a result of unfavorable ergonomic conditions, involves, among other things, the risk of dorso-lumbar injuries. [Legislative Decree No. 81 of 9 April 2008, Article 167]

Manual handling of loads presents a risk of back injury in the following cases: [Legislative Decree No. 81 of 9 April 2008, Article 168(2) and Annex XXXIII, 1]

- *The load is too heavy;*
- *The load is cumbersome or difficult to grasp;*
- *The load has an unstable equilibrium or its contents are likely to shift;*
- *The load is positioned in such a way that it should be handled at some distance from the trunk of the body, or that requires a twist or tilt of the trunk; or*
- *The load, because of its surface or texture, may cause injury to workers, especially in the event of a collision.*

The following physical efforts may result in injury: [Legislative Decree No. 81 of 9 April 2008, Article 167(2) and Annex XXXIII, 2]

- *Excessive movements;*
- *Torsion of the trunk;*
- *Sudden movement of cargo; and*
- *Unstable body positions.*

The following characteristics of the work environment may increase the potential risk of injury: [New Act, Article 168(2) and Annex XXXIII, 3]

- *Unobstructed space, especially vertically, that is insufficient for the operations;*
- *Uneven floors which present a risk of slipping and tripping;*
- *Work environments that do not allow the worker to move under safe conditions;*
- *Unstable floors or support points; and*
- *Unsuitable temperature, humidity or ventilation.*

The following activities may involve a risk of injury: [Legislative Decree No. 81 of 9 April 2008, Article 168(2) and Annex XXXIII, 4]

- *Physical efforts that result in excessive use (too frequent or too long in duration) of the spine;*
- *Insufficient breaks for rest and recovery;*
- *Distances that are too great for lifting, transport and lowering; and*
- *A rate of work imposed by a process that cannot be controlled by the worker.*

Pregnant women and minors may not engage in manual handling of loads under the following conditions: [Legislative Decree No. 81 of 9 April 2008, Article 168(2) and Annex XXXIII, Individual Risk Factors]

- *They are physically unable to perform the task in question (including for reasons due to gender or age);*
- *They are wearing inadequate clothing, footwear or other equipment for the job; or*
- *They have insufficient or inadequate knowledge or training for the work.*

12.41 Has the facility taken steps to provide organizational measures and, in particular, mechanical equipment, wherever possible, to avoid the need for manual handling of loads by workers? *[Legislative Decree No. 81 of 9 April 2008, Article 168(1)]*

Notes: Meeting the requirements of technical standard ISO 11228 (Parts 1, 2 and 3) related to manual handling (lifting, transport, towing, pushing, handling of light loads at high frequencies) is considered to fulfill the requirements of this question. [Legislative Decree No. 81 of 9 April 2008, Article 168(3) and Annex XXXIII]

12.42 Where manual handling of loads is unavoidable, has the facility performed each of the following: *[Legislative Decree No. 81 of 9 April 2008, Article 168(2)]*

- Organized the work stations so the manual handling can be performed in as safe and healthy a manner as possible;
- Taken into account, during the planning phase where possible, the safety and health requirements of the work and the prescriptions in Annex XXXIII (see the notes at the beginning of this subsection);
- Taken measures aimed at avoiding or reducing risks of back injuries, taking into account, in particular, individual risk factors, the characteristics of the work environment, and the requirements that the activity entails, as provided in Annex XXXIII (see the notes at the beginning of this subsection); and
- Subjected all employees assigned to manual loading activities to a health surveillance program on the basis of the facility's risk assessment and the factors that place them at risk, as provided in Annex XXXIII (see the notes at the beginning of this subsection)?

Transport of Material on Rails

12.43 If the facility uses carts or wagons on rails, does it ensure the following safety measures are taken: *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 3.3.3]*

- Rails are placed on the ground or other sturdily supported level, and maintained in good condition throughout the duration of the activities;
- Rails are securely attached to the sleepers (railroad ties);
- Turning platforms are provided with a blocking mechanism;
- Rails are laid so as to leave a minimum side clearance of 70 cm beyond the frame of the vehicle;
- Passageways or bridges for the movement of vehicles leave a minimum side clearance of 70 cm;
- Passageways or bridges for the movement of vehicles have a base made of wooden boards, and safety railings and toe boards;
- For long stretches of passageways or bridges, if side clearance is limited, stopping places are established at appropriate intervals; and
- Workers are not allowed to ride inside hand-pushed wagons?

Notes: Any segment of rail line involved in excavation of dumpsites must not slope towards the dumpsite. If, for technical or topographical reasons this cannot be avoided, the last section of the rail line must slope upwards. At the end of the rail line, a mechanism to ensure complete stopping of the wagon must be established. [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 3.3.4]

12.44 If the facility uses carts or wagons on rails, does it ensure the following safety measures with respect to transport on the rails: *[Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 3.3.5]*

- Movement of workers on sloping sections of the rail line is prohibited when wagons are moving;
- Signs are posted at both ends of the sloping section of the rail line indicating the prohibition in the previous bullet;
- When workers are required to cross the rail line, barriers are placed before each crossing point, parallel to the rails and provided with a central moving part; and

- The barriers described in the previous bullet are at least three times the width of the crossing?

Overhead Cranes and Hoists and Other Lifting Equipment

- 12.45** If the facility uses any equipment for the lifting of any non-guided loads, are measures in place to ensure that the radius of influence of the equipment is such that it avoids collisions with other loads and with other work equipment? *[Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.1]*
- 12.46** In the event of severe weather that could cause the toppling or collapse of lifting equipment for any non-guided loads, are all operations involving the lifting of loads suspended? *[Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.7]*
- 12.47** Does the facility ensure that the toppling or collapse of lifting equipment for any non-guided loads is prevented? *[Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.2]*
- 12.48** If the equipment operator cannot observe the full trajectory of a non-guided load, either directly or by means of auxiliary equipment, is a lifting supervisor designated to aid in communication and help guide the load to prevent collisions? *[Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.3]*
- 12.49** Are operations for moving non-guided loads organized in such a way that, when an employee engages or releases a load manually, he/she does so with maximum safety and retains direct or indirect control of the load? *[Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.4]*
- 12.50** Are operations for moving non-guided loads monitored to ensure the safety of workers and, when a load must be lifted by two or more workers simultaneously, does the facility implement a procedure to coordinate this activity? *[Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.5]*
- 12.51** If equipment used for moving non-guided loads cannot hold the load in the event of a partial or total interruption of the power supply, have appropriate measures been taken to protect the workers from associated risks? *[Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.6]*
- 12.52** When winches, hoists and other equipment are used for lifting or lowering loads between different floors of a building through openings in floors or walls, are the following

requirements met: *[Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.6]*

- Openings for the passage of the load, the lifting/lowering space, and the space used for uncoupling of the cargo are protected on all sides by guardrails, except on the ground floor;
- The railings are located so as to secure the workers against risks from impact or a possible fall of the load; and
- Railings are also provided on the sides of the openings where loading and unloading is conducted, unless the properties of goods being moved make this impossible?

Notes: If rails cannot be used, a solid mobile barrier must be fixed in the closed position by a latch or other device. This barrier must be kept closed when loading or unloading is not being conducted. [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.6]

12.53 Does the facility ensure that bricks, stones, gravel and other small materials are lifted only by means of buckets or boxes, and that simple platforms or slings are not used? *[Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.9]*

12.54 If the facility utilizes overhead cranes and hoists, does it have procedures in place to ensure compliance with each of the following general requirements: *[Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.1.1 through 3.1.7]*

- The machines are appropriate for the safety, nature, shape and volume of the loads they are required to lift and convey;
- Lifting accessories are chosen according to the loads to be handled, coupling devices to be used, weather conditions likely to be encountered, and the configuration of the equipment;
- Lifting accessories are secured so that they are not damaged during use;
- Lifting accessories are clearly marked so that they are recognizable; and
- The machine and its load are maintained in a stable state, giving due consideration to the type and speed of the machine, its acceleration in the starting and stopping phases, and the nature of the route traveled?

12.55 If the facility utilizes overhead cranes and hoists, are the following requirements met: [Legislative Decree No. 81 of 9 April 2008, Article 70(2) and Annex V, Part II, 3.1.3 and 3.1.5 through 3.1.16]

- Machines are loaded and unloaded with the help of suitable appliances or devices where loading and unloading cannot be performed manually;
- Hoisting machines, except for manual lifting equipment, are marked with the maximum permitted capacity;
- If the maximum permitted capacity varies according to the conditions under which the machine or equipment is used, the permitted capacities for various operating conditions are shown on a special rating plate;
- Hooks used for hoisting and conveying machines are marked in relief or are engraved with a clear statement of their maximum permitted capacity;
- Lifting and conveying machines are fitted with suitable braking devices that allow the machines to be stopped quickly with their loads remaining stable or, when necessary for safety purposes, so that they can be stopped gradually;

Notes: These braking devices are not required for manually operated equipment where, due to the dimensions, capacity, speed and operating conditions of the equipment, the absence of a brake does not constitute a hazard. [Legislative Decree No. 81 of 9 April 2008, Article 70(2) and Annex V, Part II, 3.1.5]

- Where a power failure could constitute a hazard to persons, the lifting machines are equipped with devices to bring both the machine and its load to a gradual halt automatically;
- Hoisting or conveying machines operating under specific dangerous conditions are fitted with appropriate acoustic and visual indicators and warnings, and have lights that illuminate the field of operation;

Notes: Specific dangerous conditions are not listed or further defined.

- Hoisting and conveying machines and plants operating by traction with winding drums and friction pulleys, as well as screw-type lifting machines, are fitted with devices that prevent the cable or chains from winding and coiling the screw from rotating beyond the pre-established safety limits;

- The seats or courses of drums or pulleys for traction hoisting and conveying machines are of a size and shape that allow the cables or chains to wind normally and freely in a manner that prevents undue overlapping or stress;
- The diameter of motor drums and pulleys for traction hoisting and conveying machines is at least 25 times greater than the diameter of the cables and 300 times the diameter of the strands of those cables, and the diameter of snub pulleys is at least 20 times greater than the diameter of the cables and 250 times the diameter of the strands of the cables;
- Cables and chains for lifting and traction machines and plants have a safety coefficient, compared to the maximum permitted stress and capacity, of at least six for metal cables, ten for fiber cables, and five for chains;
- The safety factor of cables and chains is marked on the equipment;
- The facility inspects all cables and chains on a quarterly basis, or according to the frequency specified by the manufacturer if different;
- Cables and chains are connected in a manner that prevents dangerous stress, overlapping or tangling;
- The loose ends of cables, either metal or fiber, are leaded, bound, or clamped to prevent the strands or wires from unwinding or fraying;
- Loads are anchored with suitable devices to prevent them from falling or shifting from the position in which they are fastened;
- The posts from which the hoisting and conveying machines are operated meet the following requirements:
 - Are accessible without danger to workers;
 - Are constructed or protected so that the machine's movement is regulated under safe conditions; and
 - The entire radius of operation is clearly visible;
- If the operator cannot monitor the whole of the machine's radius of operation, a signaling system is established that uses workers designated for this purpose;

- The units controlling the lifting and conveyor machines are placed in a position that can be easily activated, and are clearly marked to show the operations that they control;
- The units controlling the lifting and conveyor machines are designed or protected so as to prevent them from being accidentally activated; and
- Clearly legible notices are provided that explain the method of operating lifts and conveyor machines and the warnings that must be given before operations begin?

Notes: Cranes and lifting equipment manufactured to the standards of European Council Directive 98/37/EC may not be safe. Users must provide adequate measures to prevent risks arising from misuse of the by-pass limiter, in particular by verifying the following:[Circular Memorandum No.18752 of 28 March 2007]

- *The presence of the by-pass limiter is necessary in relation to the conditions of normal and expected abnormal situations as described by the manufacturer;*
- *The instructions for use include procedures to be applied in the conditions described in the previous bullet;*
- *The control device of the by-pass limiter is operated by a key; and*
- *The activation of the by-pass activates an acoustic and optical signal and safer operating conditions (e.g., speed reduction), unless the risk assessment carried out by the manufacturer indicates that such conditions are not necessary.*

12.56 If the facility utilizes cranes, winches, tackle or other similar equipment, does it have procedures in place to ensure compliance with the following requirements: *[Legislative Decree No. 81 of 9 April 2008, Article 71(3) and Annex VI, 3.1.4]*

- Hoisting and conveying machines used to lift and convey persons are fitted with effective safety devices or, if such devices cannot be used, appropriate precautions are taken to safeguard the persons being moved;
- If workers are present on work equipment used for lifting loads, the command post is occupied at all times and workers are in constant communication;
- Evacuation is possible in case of danger;
- Workers are not stationed under lifted loads, unless this is required for proper execution of the work; and

- Loads do not move over usually occupied, unprotected workplaces unless adequate measures are in place?

12.57 Is lifting equipment provided with appropriate optical and acoustic warnings, and lighting of the field of operation? *[Legislative Decree No. 81 of 9 April 2008, Annex V, Part II, 3.1.7]*

12.58 Do mobile platforms and scissor lifts meet the following requirements: *[Legislative Decree No. 81 of 9 April 2008, Annex V, Part II, 4.2.1]*

- Have a wide base so as to accommodate, with a large margin of safety, any variations caused by maneuvering loads and wind action;
- The runway for the wheels is leveled and the load of the platform on the ground is distributed with bearing beams/plates or equivalent equipment;
- The wheels of the mobile platform are securely locked with wedges between the two parts;
- Wheeled platforms are anchored to the building at least every two floors;
- The verticality of the mobile platform is checked with a level or plumb line;
- Scissor lifts are used only to the height for which they are made, without any added superstructures; and
- The platforms, except those used in work on power lines, are not moved when they have people or materials on them?

Notes: Machinery for lifting or moving of persons must meet the following requirements: [Legislative Decree No. 81 of 9 April 2008, Annex V, Part II, 4.]

- *Avoids the risk of falling from the cab, if any, by means of suitable devices;*
- *Avoids any risk of falling from the carrier, if any;*
- *Prevents any risk of crushing, entrapment or collision of the user, and (in particular) risks due to accidental collision; and*
- *Ensures that workers trapped in the equipment in the event of an accident are not exposed to any danger and can be released.*

If, for reasons relating to the worksite and the height difference to be overcome, the risks in the first bullet of the note above cannot be avoided, a special device must be installed with a wire-reinforced safety line that must be checked every working day. [Legislative Decree No. 81 of 9 April 2008, Annex V, Part II, 4.1]

12.59 Does lifting equipment meet the following requirements: *[Legislative Decree No. 81 of 9 April 2008, Annex V, Part II, 3.2.1 through 3.2.4]*

- Bridge crane runways that may be used to access the trolley bridge and to conduct other particular actions on the cranes themselves are easy to travel along and are provided with a solid railing about one meter above the walkway and at no less than 50 centimeters from the loading clearance of the trolley bridge;

Notes: The platform must be at least 60 centimeters wider than the crane's loading clearance. [Legislative Decree No. 81 of 9 April 2008, Annex V, Part II, 3.2.1]

- Bridge cranes, gantry cranes and other types of lifting/conveying equipment that slide on rails are provided with buffers (bumpers) on the runway ends of bridges and trolleys for resistance and cushioning that are suitable for the speed and mass of the mobile device and are not less than 6/10 of the wheel's diameter;
- Lifting-conveying equipment sliding on rails is provided with a device that controls the motor to automatically stop the trolley at the ends of the runway; and
- Power-driven elevators are constructed so they will function with the motor engaged, even during descent?

12.60 Do winches, tackle and other load lifting equipment meet the following requirements: *[Legislative Decree No. 81 of 9 April 2008, Article 63(1) and Annex IV, 1.4.12.1 through 1.4.12.3]*

- When winches, tackles and similar devices are used for load lifting or passing to different floors of a building through openings in the top floor or the walls, the openings for the passage of the load to each floor (with the exception of the ground floor), as well as the space below for arrival or release of the load, is safeguarded on all sides with standard railings and toe boards;
- Railings are arranged to protect the workers against dangers from being struck or possible falling loads; and
- Railings are also placed on the sides of the openings where loading and unloading operations are conducted; or

- Where it is not possible to place railings on the sides of openings due to the characteristics of the materials maneuvered, a solid removable barrier is fixed by means of a dead bolt or other device, and it is kept closed when loading and unloading is not being performed on that floor?

12.61 If the facility utilizes elevators and hoists, does it have procedures in place to ensure compliance with the following requirements: *[Legislative Decree No. 81 of 9 April 2008, Article 70(2) and Annex V, Part II, 4.5.0 through 4.5.12]*

- The spaces and shafts in which the elevator and hoist cars and platforms travel are separated by solid guards that are at least 70 centimeters from moving elements;
- The separating guards are at least 1.70 meters in height above the walking surface of platforms and from the edges of steps, and are constructed of solid walls or metal screens with mesh no larger than one centimeter where the moving parts are at a distance of less than four centimeters, and no larger than three centimeters where the moving parts are at a distance of four centimeters or more;
- If the counterweight is not located in the same shaft in which the car travels, the shaft and space in which the counterweight does travel is guarded in conformity with the requirements set forth in the two preceding bullets;
- Elevator and hoist shafts are accessible through doors that can open outward or doors that slide along walls at least 1.80 meters in height to where the car is accessible to personnel, or doors that are at least equal to the height of the shaft opening when the latter is less than 1.80 meters;
- The doors are constructed of solid panels, metal grills or screens with mesh no larger than one centimeter in size where the car is not equipped with a door, and no larger than three centimeters where the car is equipped with its own door and the distance of the car floor from the door to the shaft is no less than five centimeters;

Notes: Flexible-type doors must be designed in a manner that provides a gap of less than 12 millimeters between the bars forming the flexible door. Shaft access doors must each be equipped with a safety device that prevents them from opening when the car is not at the appropriate floor.

- Shaft access doors are each equipped with a safety device that will not permit any movement of the car if the doors are not shut;

Notes: This safety device is not required for manually- operated hoists so long as other appropriate safety measures are adopted. In addition, the guards and devices described above are not required where the car or platform trajectory is equal to or less than two meters and the entire installation does not present a danger of crushing, cutting or dropping inside the shaft.

- The cars of elevators and hoists for carrying materials accompanied by persons have walls at least 1.80 meters in height and doors that open inward or that slide along walls that are at least 1.80 meters in height;
- Car walls and doors are solid or have openings that are no greater than ten millimeters;

Notes: The doors may be flexible if they do not have gaps greater than 12 millimeters in width between the bars that form the door.

The doors or closures may be omitted if the shaft in which the car or platform travels is enclosed for its entire length by continuous guards in the form of solid walls, nets or metal mesh with openings no larger than one centimeter in size, provided that such guards do not have dangerous projections and are not more than four centimeters from the entrance to the car or platform, in which case the cargo must be secured.

- Hoists that carry only materials have enclosures or devices that prevent the load from falling or being ejected;
- If the elevator and hoist shaftways exceed 0.25 square meters per section, there is a vertical clearance of at least 50 centimeters between the bottom of the shaft and the member beneath the car that protrudes the farthest;
- Fixed buffer devices are provided to ensure that the car does not descend below the bottom clearance limit under any conditions;
- A minimum vertical clearance of 50 centimeters is ensured, through the use of buffers, above the ceiling of the car at the highest point of its travel;

- Hoists used exclusively for carrying materials have operating controls positioned outside the traveling shaft and in a position that cannot be activated by persons inside the car;
- A parachute device, to prevent the car from falling if suspending cables or chains break, is provided for the following elevators and hoists:
 - Elevators and hoists that carry materials and people, where the car is suspended by ropes or chains and the travel distance is more than four meters;
 - Hoists that carry only materials with a car that is accessible for loading and unloading operations; and
 - Hoists without cars that are accessible for loading and unloading and have a capacity of at least 100 kilograms;
- Elevators and hoists, except those that are manually operated, are provided with an automatic device for stopping the engine apparatus or the movement at the top and bottom of the shaft;
- Power-driven elevators and hoists operate with the motor engaged, even during descent, to prevent free-fall;
- Gravity hoist cars and platforms that are accessible on landings are equipped with a device that ensures that they are locked in place while loading; and
- Manually operated and gravity hoists are provided with braking or control devices that prevent the car or platform from traveling at dangerous speeds?

Notes: Notwithstanding the requirements above, rack and pinion systems are deemed to comply with the provisions of this question if they are manufactured in accordance with the requirements of the relevant technical standards or the guidelines issued by ISPESL "Transportation of people and materials between levels in temporary workplaces." [Legislative Decree No. 81 of 9 April 2008, Article 70(2) and Annex V, Part II, 4.5.12]

12.62 If the facility operates vertical tray, bucket, screw and belt hoists and conveyors that are not subject to European Union conformity requirements, does it have procedures in place to ensure compliance with the following requirements: *[Legislative Decree No. 81 of 9 April 2008, Article 70(2) and Annex V, Part II, 3.3.3 and 3.4]*

- Vertical tray hoists and bucket hoists are installed within shaftways or enclosed conduits equipped with only those openings necessary for loading and unloading;
- A stop device capable of bringing the machine to an immediate halt is placed near each loading and unloading opening of the vertical tray hoists;
- The vertical tray, bucket, belt and similar hoists, having portions of track placed on an incline, are equipped with an automatic stop device for use when a sudden power failure may result in a reversal of the normal direction of movement;
- Screw conveyor casings are equipped with a cover and their loading and unloading openings are effectively protected;
- Conveyor loading and unloading openings are protected to prevent persons from falling and to protect workers from dangerous moving parts;
- The loading openings of inclined paths (chutes) are surrounded by railings that are at least one meter in height, with the exception of the portion strictly necessary for loading, provided that the upper edge of the beginning of the inclined path is at a height of at least 50 centimeters above the floor level;
- The clearance below horizontal or inclined conveyors is barricaded and made inaccessible if, because of the type of material being transported and the type of conveyor, there is a danger of material falling off or of the supporting devices breaking, unless other safety measures against such risks are adopted; and
- Revolving platforms are equipped with a locking device?

12.63 If the facility operates vertical tray, bucket, screw and belt hoists and conveyors, does it have procedures in place to ensure compliance with the following requirements: *[Legislative Decree No. 81 of 9 April 2008, Annex V, Part II, 2.7 through 2.10]*

- At the end of transport rails, whether on an incline or horizontal, there is an apparatus or other measures are taken to prevent persons from being injured by any vehicles which might derail or disengage from the track;
- The devices that connect the conveying machines to each other are constructed in such a way as to make the coupling and uncoupling operations safe and to ensure that the connection is stable;

- When in motion, coupling and uncoupling of the conveying machines is prohibited unless the machines are equipped with devices that make such an operation safe and the personnel on duty are experienced in such operations;
- Any conveying machines driven by electric motors have a handle capable of being removed or locked on the main switch, or the control switches are located inside a cabinet capable of being locked with a key;
- Upon cessation of movement, the drivers of conveying machines remove or lock the handle of the main switch or lock the control cabinet with the key;
- At the beginning of a sloping track at a station, all inclined pathways with railings are equipped with automatic locking devices to prevent the carts from derailing and to prevent trains from traveling freely on the track;
- At stations or at the lower end of inclined pathways and along the same route as the inclined pathway, there are safety niches where personnel can take refuge, as appropriate on the conditions of the installation; and
- Personnel are prohibited from traveling along inclined pathways while the pathways are in use, unless the pathway itself includes tracks or passages wide enough and with the proper apparatus to allow for pedestrians to pass without danger?

12.64 If the facility operates vertical tray, bucket, screw and belt hoists and conveyors, does it have procedures in place to ensure compliance with the following requirements: *[Legislative Decree No. 81 of 9 April 2008, Article 70(2) and Annex V, Part II, 2.11 through 2.14]*

- Inclined pathways are equipped with safety devices designed to immediately stop the carts or trains if there is a break-down or slackening of the traction mechanisms, whenever such a stop may be deemed necessary with respect to the length and slope of the route, operating speed, or any other specific conditions of the installation and whenever the pathways are used, even sporadically, to transport people;
- If for technical reasons associated with specific features of the installation and its operation it is not possible to utilize a device as described in the previous bullet, the traction and coupling mechanisms on the carts have a safety coefficient of at least eight and the use of inclined pathways to transport people is prohibited;

- The traction and coupling mechanisms and safety devices are inspected on a monthly basis;
- All tanks for liquid fuel and for compressed gas for later use are stored in a safe place protected from any heat source and from risk of collision;
- All mechanical means of transport, if they are to be worker-operated for certain distances, are equipped with suitable handles making driving safe; and
- Vehicles that are unloaded by tipping are equipped with devices that prevent accidental tipping and facilitate safe execution of the operations?

12.65 Is there a barrier in front of the exits from the premises and at all routes that run directly into a crossroad where other mechanical means of transport are used, to prevent collisions or, if that is not possible, are adequate signals present? *[Legislative Decree No. 81 of 9 April 2008, Annex IV, 1.4.14]*

12.66 If the facility operates vertical tray, bucket, screw and belt hoists and conveyors, does it have procedures in place to ensure compliance with the following requirements: *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.4.15 through 1.4.19]*

- Signals are provided that indicate dangerous conditions in transport areas;
- Signals regulating the traffic of the mechanical means of transport on roads or on tracks are properly illuminated during nighttime service;
- If transport routes become hazardous for travel due to repair work or because a breakdown has occurred, they are blocked off and signs are posted to indicate the detour;
- While repair work or maintenance is conducted on transit routes with tracks for mechanical means of transport, and the traffic has not been halted or the route has not been blocked off, one or more persons are assigned exclusively to signal the approach of the cars to the other workers at their work stations;
- Whenever one or more vehicles are operated by mechanical means which cannot be directly monitored by the conductor nor by another person situated in or on one of the vehicles, these vehicles are preceded or accompanied by a person responsible for providing the necessary signals to ensure the safety of personnel;

- People are not transported in telfer cars or in other aerial funicular systems built solely for the transport of objects, except to conduct inspections, maintenance or repair, and then only once the proper precautions are taken such as the use of safety belts, the utilization of supplemental hooks from the car to the support cable, and the provision of appropriate signaling devices; and
- The area outside the cars (the sides for departure and arrival at the telfer stations) has attached solid metal gratings that meet the following requirements:
 - Strong enough to keep a person from falling;
 - Placed no lower than 0.50 meters below the edge of the steering floor; and
 - Extending out from this floor at least 2 meters?

12.67 If the facility has conveying equipment on rails, are the following requirements met: *[Legislative Decree No. 81 of 9 April 2008, Article 70(2) and Annex V, Part II, 2.15, 2.16, and 2.17]*

- Where the entire length cannot be monitored from the driver's position, telfers have a device placed at each station and at each loading and unloading site which sends operational signals from the main station; and
- Lubrication of the cables bearing telfers and other similar apparatus is conducted automatically by means of a device attached to the proper car?

Confined Spaces

Notes: "Confined space" means sumps, sewers, chimneys, tunnels, and other environments such as containers, pipes, boilers and the like, where hazardous gas may be present if it has not been verified that the atmosphere is acceptable, or if the acceptability of the atmosphere is not protected by ventilation or other means. [Legislative Decree No. 81 of 9 April 2008, Article 66]

12.68 Are workers prevented from entering confined spaces where hazardous gases may be present unless the atmosphere has been determined to be safe or ventilation or other means has ensured a proper atmosphere? *[Legislative Decree No. 81 of 9 April 2008, Article 66]*

- 12.69** If the atmosphere inside confined spaces is suspected to be hazardous, does the facility ensure that the following requirements are met: *[Legislative Decree No. 81 of 9 April 2008, Article 66]*
- Workers wear safety belts;
 - Workers are controlled and supervised for the duration of their activities;
 - If necessary, workers are provided with personal protective equipment (PPE); and
 - The entrance to such spaces is wide enough to allow an injured worker to be recovered?
- 12.70** Are workplaces protected, so far as is technically possible, by preventing or minimizing, as necessary, the formation of harmful or hazardous concentrations of flammable, asphyxiating or toxic gases, vapors or explosive dusts and is adequate ventilation provided to prevent the buildup of such concentrations? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 2.1.8.1]*
- 12.71** Are work areas and passages equipped with fire detectors and other monitors to indicate the presence of hazardous levels of vapors and gases or other dangerous conditions? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 2.1.8.2]*
- 12.72** If the facility utilizes pipes, ducts and vessels such as tanks and cisterns, which workers must enter for inspections, repairs, maintenance or other reasons associated with the operations or plant at the facility, is the equipment fitted with access openings measuring at least 30 by 40 centimeters or having a diameter of not less than 40 centimeters? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.1]*
- 12.73** Prior to allowing any workers to enter pipes, ducts or vessels, does the work supervisor ensure that the confined space contains no harmful gases or vapors and that the interior temperature is not harmful? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.2.1]*

Notes: These requirements must be observed, in particular, regarding access to underground areas, tunnels, sewers, shafts, or in attics, or where there is a risk of the presence of toxic gases or vapors. [Legislative Decree No. 81 of 9 April 2008, Article 63, and Annex IV, 2.1.13]

- 12.74** Does the facility have procedures in place to ensure that all valves and other devices in ducts connected to vessels that are to be inspected, repaired or maintained are closed, blocked, and have notices affixed to the closing or sealing devices so as to prohibit their operation or movement? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.2.2]*

Notes: These requirements must be observed, in particular, regarding access to underground areas, tunnels, sewers, shafts, or in attics, or where there is a risk of the presence of toxic gases or vapors. [Legislative Decree No. 81 of 9 April 2008, Article 63, and Annex IV, 2.1.13]

- 12.75** Where it is not possible to be absolutely certain that no harmful gases or vapors are present, or where it is difficult to access the bottom of the confined space, does the facility ensure that any worker entering the confined space wears a safety belt with rope of sufficient length and, where necessary, equipment that will allow the worker to breathe normally? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 2.1.6.2 and 3.2.4]*

- 12.76** Do facility procedures ensure that, whenever a worker is performing work inside a confined space, a second employee is stationed outside near the access opening? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.2.3]*

- 12.77** Where it is not possible to be absolutely certain that no flammable or explosive gases, vapors, or dusts are present in a confined space, does the facility ensure that steps are taken to prevent fire and explosion hazards, such as prohibiting open flames, incandescent elements, tools of ferrous materials or shoes with studs? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.3]*

Notes: If lamps are used, they must be safety lamps. [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.3]

Tanks and Vessels

- 12.78** Does the facility ensure that open tanks, cisterns and vessels with edges at the same level as, or less than 90 centimeters above, the floor level or the level of the working platform are, regardless of the liquid or the substance they contain, protected on all sides by guards of not less than 90 centimeters in height in the form of either a solid wall or at least two railings? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.4.1]*

Notes: Such guards are not required if protection is fitted to the edges of the tanks up to a height of 90 centimeters above floor level. Also, in the case of ducts inside factories and

work sites, and outside ducts in those sections serving as work yards but not used for loading and unloading, the guards must not be less than one meter in height. This requirement does not apply to tanks, ducts, cisterns, or vessels that are no more than one meter deep and do not contain harmful liquids or substances, provided that other precautions are adopted. [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.4.1 through 3.4.4]

- 12.79** If, due to working requirements or installation conditions, the guards described in Question 12.78 cannot be applied, does the facility ensure that the top openings of the vessels are provided with substantial covers or other guards to prevent workers from falling in? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.4.2]*
- 12.80** Where fixed ladder cannot be provided for access to cisterns, vats, tanks or similar units that are over two meters in depth and have no openings that provide access to the bottom, are removable ladders with retaining hooks provided for access? *[Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.5]*

Specialized Work Equipment

- 12.81** Are work areas, including access areas, for free fall drop hammers used for the crushing of cast iron, scrap metal or other materials completely surrounded by sturdy walls to prevent the ejection of fragments of material? *[Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 5.1.1, 5.1.2]*
- 12.82** For work areas for free fall drop hammers used for the crushing of cast iron, scrap metal or other materials, is operation of the machinery conducted from outside the enclosure or otherwise suitably protected from the work area of the machinery? *[Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 5.1.3]*
- 12.83** Are facilities where there is violent ejection of material in production, such as steel mills, provided with safety barriers to protect workers? *[Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 5.2.1]*

Notes: When technological requirements or the special conditions of the installation mean it is not possible to provide a barrier, other appropriate steps should be taken to ensure safety. [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 5.2.2]

Health and Safety Signs

Notes: Health and safety signs are signs relating to a specific object, activity or situation, which provide information or instructions about safety and/or health at work by means of a signboard, use of colors,

an illuminated sign or an acoustic signal, or a verbal communication or a hand signal, as the case may be. [Legislative Decree No. 81 of 9 April 2008, Article 162(1) (a)]

This subsection does not apply to signs used for regulating road, rail, inland waterway, sea or air transport. [Legislative Decree No. 81 of 9 April 2008, Article 161(2)]

12.84 If hazards identified by the facility's risk assessment cannot be prevented by collective protection measures, methods or procedures for organization of work, has the facility used safety signage in compliance with Annexes XXIV to XXXII (see Appendix 12-B) to address hazards? *[Legislative Decree No. 81 of 9 April 2008, Article 163(1)]*

Notes: The Annexes covered in Appendix 12-B are as follows:

- Annex XXIV: General Requirements Concerning Safety and Health Signs;*
- Annex XXV: General Requirements Concerning Signboards;*
- Annex XXVI: Requirements Governing Signs on Containers and Pipes;*
- Annex XXVII: Requirements for the Identification and Location of Fire-Fighting Equipment;*
- Annex XXVIII: Requirements Governing Signs Used for Obstacles and Dangerous Locations, and for Marking Traffic Routes;*
- Annex XXIX: Requirements for Illuminated Signs;*
- Annex XXX: Requirements for Acoustic Signs;*
- Annex XXXI: Requirements for Verbal Communications; and*
- Annex XXXII: Requirements for Hand Signals.*

12.85 Do all safety and health signs used at the facility meet the minimum requirements set forth in Appendix 12-B? *[Legislative Decree No. 81 of 9 April 2008, Article 163(1)]*

12.86 If the facility has traffic ways within the facility, are circulation routes marked in accordance with Annex XXXVIII (see Appendix 12-B)? *[Legislative Decree No. 81 of 9 April 2008, Article 163(3)]*

12.87 Where it is necessary to use signs that are not covered Annexes XXIV through XXXII (see Appendix 12-B), has the facility used signs according to best practices, the special requirements of the risk, and experience? *[Legislative Decree No. 81 of 9 April 2008, Article 163(2)]*

12.88 Has the facility informed workers and/or their representatives of all the measures to be taken concerning the use of health and/or safety signs at work? *[Legislative Decree No. 81 of 9 April 2008, Article 164]*

- 12.89** Have workers received suitable training regarding health and safety signs, including specific instructions, so that they understand the meaning of signs, especially when these involve gestures or words, and including the general and specific behavior to be adopted?
[Legislative Decree No. 81 of 9 April 2008, Article 164]

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is intended for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter one does not contain the electronic links and other functionality contained in the MS Word version.

Each of the questions from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, there are electronic links back to the original protocol document. To return to where you were in the AQC after following a link, use the “Return to Audit Quick Check” button located on the Audit Quick Check Toolbar.

Audit Quick Check Toolbar

The AQC Toolbar contains several automated functions and should be visible when you open the AQC document. To activate the toolbar if it is NOT visible, select View | Toolbars | and then click on Audit Quick Check Toolbar. You may move the toolbar to anyplace on the document by left clicking anywhere inside of the upper portion of the Toolbar (dark blue area) and dragging it to the desired location.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X’s to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

At the end of the AQC there is a section entitled, Additional Questions. You may add more questions at this point. Examples might include corporate requirements or best management practices. We have provided space for the insertion of several additional questions. If you wish to delete these additional spaces, select the row(s) you want deleted and press shift+delete. To add more questions, including the check boxes, copy and paste the last row of the table. To do this, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Then, copy the information in the row above by placing the cursor on the far left side of the row to be copied, outside the table margin, left click to highlight the information to be copied, and then right click and click on “Copy.” Lastly, move the cursor into the empty row and paste the copied information (Control C). You can continue to sequentially number the questions by putting your cursor on the existing number and changing it. Use “Control Tab” to create the spacing between the question number and the text of the question.

Sorting Responses and Transferring Information

There is a sort feature that you may want to use following completion of the audit. A sort box appears on the far right side of the toolbar. Press “Sort By” and then four choices will be identified, three of which correspond to a specific column number. For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click on Column 3 (unless you have customized the column headings and re-organized them, in which case you will select the column number of interest to you). Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

The fourth sort choice, Sequential, will sort the responses sequentially by column number (i.e., Column 1 responses first, followed by Column 2 responses, etc.).

WARNING: Once the sort feature has been used, you cannot automatically revert back to the original order unless you hit the “Undo Typing” symbol in the MS Word Toolbar. As a result, it is recommended that you save the “sorted” file to a different file name. In that way, you can preserve the original Audit Quick Check information, including original ordering of that information, plus the sorted information.

Transferring Information

Once you have collated all of the Does Not Comply questions (or whatever category of questions in which you have an interest), you can use “Block” and “Copy” to transfer that information to any other document. This feature will help in the eventual audit report writing.

Printing Quick Checklist

Click on the Print Quick Check button at the end of the document to print out only the Audit Quick Check; it will print to whatever you have designated as your default printer. If you are outside of your office and wish to print to a local printer, you will need to change the default printer setting on your computer to a local printer before using the Print Quick Check button.

12.0 MATERIAL HANDLING AND GENERAL IN-PLANT SAFETY

AUDIT QUICK CHECK

SITE: _____

DATE: _____

ASSESSOR: _____

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
Material Handling and General In-Plant Safety			
See protocol for notes.			
General			
12.1 Are facility buildings that house a workplace or structure for work designed and built so that they are appropriate to their type of use, and are they adequately maintained? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.1.1 and 1.1.2] Comments:	☐	☐	☐
12.2 Is access for normal maintenance work and repairs to tall buildings, parts of plant, equipment, machinery, poles, etc., made safe and easy through the use of appropriate means, such walkways, ladders, brackets, crampons to climb piles, or other appropriate devices? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.1.5] Comments:	☐	☐	☐
12.3 Are the metal structures of buildings and temporary works and large outdoor metal receptacles and appliances, either themselves or through appropriate means, electrically grounded in order to ensure dispersal of atmospheric discharges? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.1.8] Comments:	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
Traffic Routes, Danger Areas, Floors and Passageways			
12.4 Are the following requirements with respect to traffic routes, danger areas, floors and passageways met: [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV 1.4.1 through 1.4.8] – Traffic routes, including stairs, fixed ladders and loading bays and ramps, are located and calculated in a manner that allows pedestrians or vehicles to use them easily and safely, for their intended use, and in a manner that does not endanger the workers employed in the vicinity of those traffic routes; – The facility's calculation of the dimensions of traffic routes for pedestrians and/or goods are based on the potential number of users and the type of company; – When means of transport are used on traffic routes, a sufficient safety clearance is provided for pedestrians; – Sufficient clearance is allowed between vehicle traffic routes and doors, gates, passages for pedestrians, corridors and stairs; – Traffic routes are clearly identified, based on their routes and use; – If the workplaces contain danger areas that pose risks to the workers or that may expose workers to falling objects, the places are equipped with barriers that prevent unauthorized workers from entering those areas; and – Appropriate measures are taken to protect workers authorized to enter danger zones? See protocol for notes. Comments:			
12.5 Are the following requirements with respect to traffic routes, danger areas, floors and passageways met: [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.4.8 through 1.4.11] – Danger areas are clearly indicated; – The floors of work areas and places intended for passage have no dangerous bumps or holes and are in a condition so that movement and traffic by persons or means of transport is safe; – Floors and passageways are not cluttered by materials which block the normal traffic flow; and – When, for obvious technical reasons it is not possible to completely eliminate from the traffic areas all of the fixed or mobile obstacles which might constitute a danger to workers or vehicles, the obstacles are properly marked?			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
Comments:			
12.6 If a floor area within the facility is designated for material storage, has the facility clearly marked the maximum floor load on the wall or in another conspicuous place? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.1] See protocol for notes. Comments:			
12.7 In places designated for material storage, does the facility ensure that the following requirements are met: [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.1.4] – Loads do not exceed the maximum indicated load; and – Loads are reasonably distributed to ensure stability? Comments:			
12.8 Where possible, has the facility provided solid covers or railings around every floor or wall opening that are capable of preventing persons from falling? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.5.14.1] Comments:			
12.9 If it is not possible to provide solid covers or railings around every floor or wall opening as in Question 12.8, has the facility provided hazard signs that inform persons of the danger? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.5.14.1] Comments:			
12.10 If the facility has any wall openings that permit the passage of persons or that present a danger of falling due to a difference in level of more than one meter, has it provided a solid barrier or a standard railing to mitigate the danger? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.5.14.2]			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
See protocol for notes. Comments:			
12.11 If the facility utilizes scaffolding, runways, platforms, access ramps, balconies and elevated working or traffic areas, does it ensure that these surfaces are guarded by standard railings or standard railings with toe boards on all open sides? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.3] See protocol for notes. Comments:			
12.12 Are the following requirements met with respect to the general condition of workplaces inside the facility: [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.3.2] – Floors have no dangerous bumps, holes or slopes and are fixed, stable and not slippery; – Where putrescible materials or liquids are normally poured, the floors have a solid and impermeable surface and have sufficient slope to cause the liquids to drain quickly toward the collection and discharge point; and – When the floor of workstations or passageways is consistently wet, it is permanently covered with pallets or grating if the workers are not supplied with suitable waterproof footwear? Comments:			
12.13 Does the facility ensure that workstations and passageways are protected against the possible fall of, or collision with, materials associated with the work activity? [Legislative Decree No. 81 of 9 April 2008, Article 6 and Annex IV, 1.8.1] Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
12.14 If fall protection using technical means is not possible, are other precautions taken? [Legislative Decree No. 81 of 9 April 2008, Article 63, Annex IV, 1.8.2] Comments:	☐	☐	☐
Stairs			
12.15 Does the facility ensure that each fixed stairway is equipped with treads and risers in accordance with best professional practice and that widths are adequate for traffic needs? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.1] Comments:	☐	☐	☐
12.16 Does the facility ensure that all fixed stairs and their landings are guarded by standard railings or other equivalent protection on all open sides? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.2] Comments:	☐	☐	☐
12.17 If the facility has a flight of fixed stairs located between two walls, does the facility ensure that the stairs are provided with at least one hand rail? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.2] Comments:	☐	☐	☐
Ladders			
See protocol for notes.			
12.18 Does the facility ensure that all fixed ladders of more than five meters in height that are fixed to walls or vertical structures, or that are at a pitch exceeding 75 degrees, are provided with a solid metal protective cage with screens or openings of sufficient width to prevent accidental falls backwards from 2.5 meters above the ground or floor level? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.3]	☐	☐	☐

		<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
		Not Applicable	Complies	Does not Comply
	Comments:			
12.19	Does the facility ensure that the cages provided on fixed ladders are not more than 60 centimeters from the ladder? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.4]			
	Comments:			
12.20	Does the facility ensure that the rungs of fixed ladders are at least 15 centimeters from the wall to which they are attached, or to which the ladder of which they are a part is attached? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.5]			
	Comments:			
12.21	If it is not possible to provide fixed ladders with a protective cage, has the facility adopted other safety measures that will prevent persons from falling from more than one meter in height? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.7.1.6]			
	Comments:			
12.22	Does the facility ensure that portable (hand) ladders are constructed of materials suitable to the conditions of use and are equipped as follows: [Legislative Decree No. 81 of 9 April 2008, Article 113(3-4)] – Non-slip devices are located on the bottoms (feet) of both side rails; – Hooks or non-slip supports are located on the tops as necessary to ensure the stability of the ladders; and – If the ladders are made of wood, rungs are attached to the side rails by means of fixed joints? See protocol for notes.			
	Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
12.23 If the use of stairs involves a risk of slipping because of their height or other reasons, are they properly secured or held at the foot by another person? [Legislative Decree No. 81 of 9 April 2008, Article 113(5)] Comments:	☐	☐	☐
12.24 Does the facility ensure that ladders are placed so as to ensure their stability during use, in accordance with the following criteria: [Legislative Decree No. 81 of 9 April 2008, Article 113(6)] – Portable ladders rest on a stable, strong, suitably-sized, immobile footing so that the rungs are horizontal; – Suspended ladders are attached in a secure manner and, except for rope ladders, so as to prevent movement or swinging; – Slipping of the foot or top of ladders during their use is prevented by fixing the top or bottom of the uprights, or using an anti-slip device, or by any other means of equivalent effectiveness; – Ladders used for access are long enough to protrude sufficiently beyond the access point, unless other arrangements ensure a secure grip; – Extension ladders are assembled so that the extensions are firmly attached to each other; and – Ladders are placed securely and steadied before anyone ascends them? Comments:	☐	☐	☐
12.25 Does the facility ensure that ladders available to workers are at all times sturdy and safe, and that transport of materials by hand does not compromise safety? [Legislative Decree No. 81 of 9 April 2008, Article 113(7)] Comments:	☐	☐	☐
12.26 If the facility utilizes portable extension ladders, does it ensure that the ladders are designed and used in accordance with the following: [Legislative Decree No. 81 of 9 April 2008, Article 113(8)] – The ladders are not longer than 15 meters, except where there are special requirements, in which case the top ends of the side rails are affixed to stationary parts; – Ladders that are longer than 8 meters are equipped with spreaders so as to minimize deflection;	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
- Workers do not remain on the ladders when they are being moved sideways; - During use, the ladder is supervised at all times; and - During particularly hazardous activities, a person exercises continuous supervision of the ladder from the ground? Comments:			
12.27 If the facility utilizes step ladders, does it ensure the following: [Legislative Decree No. 81 of 9 April 2008, Article 113(9)] - The ladders are not more than 5 meters in height; and - The ladders are provided with a substantial chain or other device to prevent the ladder from opening beyond the safe limit? Comments:			
12.28 When performing work on ladders or platforms, does the facility ensure that all hand tools are kept in cases or are fastened so that they will not fall? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex VI, 1.7] Comments:			
Mobile and Aerial Ladders			
12.29 If the facility uses cart-based aerial ladders, does it ensure that the following requirements are met: [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.3.1] - The cart holding an aerial ladder is placed on a resistant horizontal base, so that the symmetry plane of the ladder is vertical, as checked using a plumb line placed on the rear of the cart itself; - The aerial ladder is not used at an angle of less than 60 degrees or more than 80 degrees to the horizontal; See protocol for notes. - Each part of the ladder is sequentially numbered according to its order of assembly; and - Before assembling the ladder, strong double chocks are applied to each wheel, connected with chains or links?			

		<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
		Not Applicable	Complies	Does not Comply
Comments:				
12.30	If the facility uses aerial ladders, does it ensure the following with respect to their safe movement: [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.3.2] – All moving and positioning operations are undertaken when the ladder is unloaded; – When mounting the ladder, shaking is avoided; – Workers climbing the ladder remain on the median line of the ladder and limit any load they carry to 20 kg when the ladder is fully extended; – The number of people using the ladder at the same time does not exceed the maximum specified in the testing report for the ladder; – All activities by workers on the top of the ladder involving pushing or pulling are prohibited; – The top of the ladder is not leaned against fixed structures; and – When it is necessary to move an aerial ladder next to electric lines, it is lowered sufficiently to avoid contact? Comments:			
Mobile or Suspended Scaffolding				
12.31	If the facility uses a suspended platform, are the following requirements met: [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.1] – Light suspended platforms are not used for loads (including the worker) greater than 100 kg per meter of length, and are not wider than 1 meter; See protocol for notes. – No more than two people are allowed on a light platform at the same time; – Light platforms are only used for finishing or maintenance activities, or other activities of limited scope; See protocol for notes. – Heavy suspended platforms, having four suspension ropes and four maneuvering winches, are not wider than 1.5 meters; – Single units of heavy suspended platforms connected and forming a continuous bridge are placed at the same level; – The number of people allowed at the same time on a heavy suspended platform is limited to the maximum indicated on the label for the scaffolding; and			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
The winches for each suspended platform unit are of the same type and the same load-bearing capacity? Comments:			
12.32 If the facility uses suspended platforms, does it ensure the following with respect to the support structure of the platforms: [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.2] - The platform unit consists of two exterior metal frames, connected by horizontal beams supporting cross-beams which, in turn, support wooden planks; - The two metal frames are mounted at a distance not greater than 3 meters; - The horizontal beams connecting the frames extend beyond the edges of the frames by 50 cm, and are equipped with safety systems to prevent their release from the metal frames; - The walkway of the platform consists of boards having a minimum thickness of 4 cm that are positioned close to each other, safeguarded against shifting, and the timber of the board has longitudinal, straight grain without wood knots; See protocol for notes. - The connection between more than one heavy platform unit is by direct connection between adjacent units, with no connecting walkways; and - Bolts used in assembly are safeguarded by elastic washers and with counter bolts? Comments:			
12.33 If the facility uses suspended platforms, does it ensure the following requirements are met with respect to the railings: [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.3] - The exposed sides of the platforms are provided with railings and toe boards; - The top rung of the external rail of light platforms consists of an iron tubing 4 cm in diameter (other rungs may be comprised of wood); - The vertical open space between the toe board and the first rung, and between the first rung and the rung above, is not greater than 30 cm; - The components of the railing are solidly attached to the internal part of the vertical support of the platform, in correspondence with the winches; and			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
On heavy platforms, a toe board is constructed along the side adjacent to the structure that has no railing, with a height not less than 5 cm? Comments:			
12.34 If the facility uses suspended platforms, do the winches operating the suspended structures meet the following requirements: [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.4] - Are rigidly connected to the suspension framework; - Have automatic brakes for falls and have an automatic stopping system drum; - The reel is made of steel and has lateral flanges of a diameter equal to two diameters of the rope when the line is completely reeled; - The diameter of the reel is not less than 12 times the diameter of the rope; - The component parts of the winch which are subject to dynamic movement have a safety coefficient of not less than 8; - Have a metal label, located in a visible location, that indicates the maximum load, and the number of persons allowed with reference to the specific winch; and - The label on each winch indicates the manufacturing firm, the year of manufacture and the serial number? Comments:			
12.35 If the facility uses suspended platforms, do the lines or ropes supporting the suspended structures meet the following requirements: [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.45] - Ropes are of flexible material, made with braided wires, with a breaking load not less than 120 kg per mm², and not greater than 160 kg per mm², with a safety coefficient not lower than 10; - The cables and the component wires are protected against corrosive external agents by greasing; - The attachment to the winch reel is soldered so as to prevent release; and - The attachment to the support board of the suspended platform is done by closing the end of the cable, folded into an eyelet with the cable ends intertwined, with not less than three terminal bolts, and an appropriate mechanism for distributing the pressure on the suspension hook or ring is inserted into the eyelet?			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
Comments:			
12.36 If the facility uses suspended platforms, does it ensure that the supporting beams of the platforms meet the following requirements: [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.6] - Supporting beams are made of sectional steel with a safety coefficient of not less than 6, calculated for each installation; - Support beams are laid on sturdy structures and materials; - Support beams extend toward the inside of the building by not less than twice the free projected length; - Support beams are securely anchored to components of established strength, ensuring a distribution of loads appropriate to prevent any movement; - The support beams are not anchored by weights; and - The connecting rings or hooks of the cable to the support beam have a safety coefficient of not less than 6, and are fixed so as to avoid slipping along the beam to the exterior? Comments:			
12.37 If the facility uses suspended platforms, does it ensure that access to and exit from the platform is appropriate to the conditions of use and employs a means to ensure safe transfer and movement? [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.7] See protocol for note. Comments:			
12.38 If the facility uses suspended platforms, does it take the following precautions to ensure stability: [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.8] - At each level of work, suspended platforms are anchored to stable points of the construction structure; - The distance of the boards of heavy platforms from the construction wall does not exceed 10 cm; See protocol for notes. - The suspended platforms are never used as lifts, and no lift-type equipment is installed on them; and			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
On light platforms, the attachment point of the suspension cables is situated at a height of at least 1.5 meters from the platform walkway? Comments:			
12.39 If the facility uses suspended platforms or bridges, does it take the following precautions to ensure maneuverability of the platforms: [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.9] - Before lowering or raising the platform, it is determined that there are no obstacles to movement, and no overloading of material; - During movement of the winch, at least two turns of the cable remain coiled on the cable reel; - The movement is simultaneous on the two winches for light platforms; and - For heavy platforms, the movement of winches at each end is simultaneous for that end, proceeding with subsequent winch movements which do not cause the platform to slope by more than 10%? Comments:			
12.40 If the facility uses suspended platforms or scaffolding, does it ensure the following with respect to the suspended equipment: [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 4.4.10] - The platforms are subject to constant maintenance and upkeep; See protocol for notes. - Platform ropes and winches are routinely oiled; - Platform ropes are replaced when, along any length of rope corresponding to four times the helix pattern of the rope, the number of obvious broken rope filaments is over 10% of the filaments making up the rope; and - Platform winches are tested before use and undergo biennial inspections? Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
Manual Handling of Loads			
See protocol for notes.			
12.41 Has the facility taken steps to provide organizational measures and, in particular, mechanical equipment, wherever possible, to avoid the need for manual handling of loads by workers? [Legislative Decree No. 81 of 9 April 2008, Article 168(1)] See protocol for notes. Comments:			
12.42 Where manual handling of loads is unavoidable, has the facility performed each of the following: [Legislative Decree No. 81 of 9 April 2008, Article 168(2)] – Organized the work stations so the manual handling can be performed in as safe and healthy a manner as possible; – Taken into account, during the planning phase where possible, the safety and health requirements of the work and the prescriptions in Annex XXXIII (see the notes at the beginning of this subsection); – Taken measures aimed at avoiding or reducing risks of back injuries, taking into account, in particular, individual risk factors, the characteristics of the work environment, and the requirements that the activity entails, as provided in Annex XXXIII (see the notes at the beginning of this subsection); and – Subjected all employees assigned to manual loading activities to a health surveillance program on the basis of the facility's risk assessment and the factors that place them at risk, as provided in Annex XXXIII (see the notes at the beginning of this subsection)? Comments:			
Transport of Material on Rails			
12.43 If the facility uses carts or wagons on rails, does it ensure the following safety measures are taken: [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 3.3.3] – Rails are placed on the ground or other sturdily supported level, and maintained in good condition throughout the duration of the activities; – Rails are securely attached to the sleepers (railroad ties); – Turning platforms are provided with a blocking mechanism;			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
– Rails are laid so as to leave a minimum side clearance of 70 cm beyond the frame of the vehicle; – Passageways or bridges for the movement of vehicles leave a minimum side clearance of 70 cm; – Passageways or bridges for the movement of vehicles have a base made of wooden boards, and safety railings and toe boards; – For long stretches of passageways or bridges, if side clearance is limited, stopping places are established at appropriate intervals; and – Workers are not allowed to ride inside hand-pushed wagons? See protocol for notes. Comments:			
12.44 If the facility uses carts or wagons on rails, does it ensure the following safety measures with respect to transport on the rails: [Legislative Decree No. 81 of 9 April 2008, Article 108 and Annex V, 3.3.5] – Movement of workers on sloping sections of the rail line is prohibited when wagons are moving; – Signs are posted at both ends of the sloping section of the rail line indicating the prohibition in the previous bullet; – When workers are required to cross the rail line, barriers are placed before each crossing point, parallel to the rails and provided with a central moving part; and – The barriers described in the previous bullet are at least three times the width of the crossing? Comments:			
Overhead Cranes and Hoists and Other Lifting Equipment			
12.45 If the facility uses any equipment for the lifting of any non-guided loads, are measures in place to ensure that the radius of influence of the equipment is such that it avoids collisions with other loads and with other work equipment? [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.1] Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
12.46 In the event of severe weather that could cause the toppling or collapse of lifting equipment for any non-guided loads, are all operations involving the lifting of loads suspended? [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.7] Comments:	☐	☐	☐
12.47 Does the facility ensure that the toppling or collapse of lifting equipment for any non-guided loads is prevented? [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.2] Comments:	☐	☐	☐
12.48 If the equipment operator cannot observe the full trajectory of a non-guided load, either directly or by means of auxiliary equipment, is a lifting supervisor designated to aid in communication and help guide the load to prevent collisions? [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.3] Comments:	☐	☐	☐
12.49 Are operations for moving non-guided loads organized in such a way that, when an employee engages or releases a load manually, he/she does so with maximum safety and retains direct or indirect control of the load? [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.4] Comments:	☐	☐	☐
12.50 Are operations for moving non-guided loads monitored to ensure the safety of workers and, when a load must be lifted by two or more workers simultaneously, does the facility implement a procedure to coordinate this activity? [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.5] Comments:	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
12.51 If equipment used for moving non-guided loads cannot hold the load in the event of a partial or total interruption of the power supply, have appropriate measures been taken to protect the workers from associated risks? [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.6] Comments:	☐	☐	☐
12.52 When winches, hoists and other equipment are used for lifting or lowering loads between different floors of a building through openings in floors or walls, are the following requirements met: [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.6] – Openings for the passage of the load, the lifting/lowering space, and the space used for uncoupling of the cargo are protected on all sides by guardrails, except on the ground floor; – The railings are located so as to secure the workers against risks from impact or a possible fall of the load; and – Railings are also provided on the sides of the openings where loading and unloading is conducted, unless the properties of goods being moved make this impossible? See protocol for notes. Comments:	☐	☐	☐
12.53 Does the facility ensure that bricks, stones, gravel and other small materials are lifted only by means of buckets or boxes, and that simple platforms or slings are not used? [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.2.9] Comments:	☐	☐	☐
12.54 If the facility utilizes overhead cranes and hoists, does it have procedures in place to ensure compliance with each of the following general requirements: [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 3.1.1 through 3.1.7] – The machines are appropriate for the safety, nature, shape and volume of the loads they are required to lift and convey; – Lifting accessories are chosen according to the loads to be handled, coupling devices to be used, weather conditions likely to be encountered, and the configuration of the equipment;	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
– Lifting accessories are secured so that they are not damaged during use; – Lifting accessories are clearly marked so that they are recognizable; and – The machine and its load are maintained in a stable state, giving due consideration to the type and speed of the machine, its acceleration in the starting and stopping phases, and the nature of the route traveled? Comments:			
12.55 If the facility utilizes overhead cranes and hoists, are the following requirements met: [Legislative Decree No. 81 of 9 April 2008, Article 70(2) and Annex V, Part II, 3.1.3 and 3.1.5 through 3.1.16] – Machines are loaded and unloaded with the help of suitable appliances or devices where loading and unloading cannot be performed manually; – Hoisting machines, except for manual lifting equipment, are marked with the maximum permitted capacity; – If the maximum permitted capacity varies according to the conditions under which the machine or equipment is used, the permitted capacities for various operating conditions are shown on a special rating plate; – Hooks used for hoisting and conveying machines are marked in relief or are engraved with a clear statement of their maximum permitted capacity; – Lifting and conveying machines are fitted with suitable braking devices that allow the machines to be stopped quickly with their loads remaining stable or, when necessary for safety purposes, so that they can be stopped gradually; See protocol for notes. – Where a power failure could constitute a hazard to persons, the lifting machines are equipped with devices to bring both the machine and its load to a gradual halt automatically; – Hoisting or conveying machines operating under specific dangerous conditions are fitted with appropriate acoustic and visual indicators and warnings, and have lights that illuminate the field of operation; See protocol for notes. – Hoisting and conveying machines and plants operating by traction with winding drums and friction pulleys, as well as screw-type lifting machines, are fitted with devices that prevent the cable or chains from winding and coiling the screw from rotating beyond the pre-established safety limits; – The seats or courses of drums or pulleys for traction hoisting and conveying machines are of a size and shape that allow the cables or chains to wind normally and freely in a manner that prevents undue overlapping or stress;			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
– The diameter of motor drums and pulleys for traction hoisting and conveying machines is at least 25 times greater than the diameter of the cables and 300 times the diameter of the strands of those cables, and the diameter of snub pulleys is at least 20 times greater than the diameter of the cables and 250 times the diameter of the strands of the cables; – Cables and chains for lifting and traction machines and plants have a safety coefficient, compared to the maximum permitted stress and capacity, of at least six for metal cables, ten for fiber cables, and five for chains; – The safety factor of cables and chains is marked on the equipment; – The facility inspects all cables and chains on a quarterly basis, or according to the frequency specified by the manufacturer if different; – Cables and chains are connected in a manner that prevents dangerous stress, overlapping or tangling; – The loose ends of cables, either metal or fiber, are leaded, bound, or clamped to prevent the strands or wires from unwinding or fraying; – Loads are anchored with suitable devices to prevent them from falling or shifting from the position in which they are fastened; – The posts from which the hoisting and conveying machines are operated meet the following requirements: – Are accessible without danger to workers; – Are constructed or protected so that the machine's movement is regulated under safe conditions; and – The entire radius of operation is clearly visible; – If the operator cannot monitor the whole of the machine's radius of operation, a signaling system is established that uses workers designated for this purpose; – The units controlling the lifting and conveyor machines are placed in a position that can be easily activated, and are clearly marked to show the operations that they control; – The units controlling the lifting and conveyor machines are designed or protected so as to prevent them from being accidentally activated; and – Clearly legible notices are provided that explain the method of operating lifts and conveyor machines and the warnings that must be given before operations begin? See protocol for notes. Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
12.56 If the facility utilizes cranes, winches, tackle or other similar equipment, does it have procedures in place to ensure compliance with the following requirements: [Legislative Decree No. 81 of 9 April 2008, Article 71(3) and Annex VI, 3.1.4] – Hoisting and conveying machines used to lift and convey persons are fitted with effective safety devices or, if such devices cannot be used, appropriate precautions are taken to safeguard the persons being moved; – If workers are present on work equipment used for lifting loads, the command post is occupied at all times and workers are in constant communication; – Evacuation is possible in case of danger; – Workers are not stationed under lifted loads, unless this is required for proper execution of the work; and – Loads do not move over usually occupied, unprotected workplaces unless adequate measures are in place? Comments:			
12.57 Is lifting equipment provided with appropriate optical and acoustic warnings, and lighting of the field of operation? [Legislative Decree No. 81 of 9 April 2008, Annex V, Part II, 3.1.7] Comments:			
12.58 Do mobile platforms and scissor lifts meet the following requirements: [Legislative Decree No. 81 of 9 April 2008, Annex V, Part II, 4.2.1] – Have a wide base so as to accommodate, with a large margin of safety, any variations caused by maneuvering loads and wind action; – The runway for the wheels is leveled and the load of the platform on the ground is distributed with bearing beams/plates or equivalent equipment; – The wheels of the mobile platform are securely locked with wedges between the two parts; – Wheeled platforms are anchored to the building at least every two floors; – The verticality of the mobile platform is checked with a level or plumb line; – Scissor lifts are used only to the height for which they are made, without any added superstructures; and – The platforms, except those used in work on power lines, are not moved when they have people or materials on them? See protocol for notes.			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
Comments:			
12.59 Does lifting equipment meet the following requirements: [Legislative Decree No. 81 of 9 April 2008, Annex V, Part II, 3.2.1 through 3.2.4] – Bridge crane runways that may be used to access the trolley bridge and to conduct other particular actions on the cranes themselves are easy to travel along and are provided with a solid railing about one meter above the walkway and at no less than 50 centimeters from the loading clearance of the trolley bridge; - See protocol for notes. – Bridge cranes, gantry cranes and other types of lifting/conveying equipment that slide on rails are provided with buffers (bumpers) on the runway ends of bridges and trolleys for resistance and cushioning that are suitable for the speed and mass of the mobile device and are not less than 6/10 of the wheel's diameter; – Lifting-conveying equipment sliding on rails is provided with a device that controls the motor to automatically stop the trolley at the ends of the runway; and – Power-driven elevators are constructed so they will function with the motor engaged, even during descent? Comments:			
12.60 Do winches, tackle and other load lifting equipment meet the following requirements: [Legislative Decree No. 81 of 9 April 2008, Article 63(1) and Annex IV, 1.4.12.1 through 1.4.12.3] – When winches, tackles and similar devices are used for load lifting or passing to different floors of a building through openings in the top floor or the walls, the openings for the passage of the load to each floor (with the exception of the ground floor), as well as the space below for arrival or release of the load, is safeguarded on all sides with standard railings and toe boards; – Railings are arranged to protect the workers against dangers from being struck or possible falling loads; and – Railings are also placed on the sides of the openings where loading and unloading operations are conducted; or – Where it is not possible to place railings on the sides of openings due to the characteristics of the materials maneuvered, a solid removable barrier is fixed by means of a dead bolt or other device, and it is kept closed when loading and unloading is not being performed on that floor?			

		<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
		Not Applicable	Complies	Does not Comply
Comments:				
12.61	If the facility utilizes elevators and hoists, does it have procedures in place to ensure compliance with the following requirements: [Legislative Decree No. 81 of 9 April 2008, Article 70(2) and Annex V, Part II, 4.5.0 through 4.5.12] – The spaces and shafts in which the elevator and hoist cars and platforms travel are separated by solid guards that are at least 70 centimeters from moving elements; – The separating guards are at least 1.70 meters in height above the walking surface of platforms and from the edges of steps, and are constructed of solid walls or metal screens with mesh no larger than one centimeter where the moving parts are at a distance of less than four centimeters, and no larger than three centimeters where the moving parts are at a distance of four centimeters or more; – If the counterweight is not located in the same shaft in which the car travels, the shaft and space in which the counterweight does travel is guarded in conformity with the requirements set forth in the two preceding bullets; – Elevator and hoist shafts are accessible through doors that can open outward or doors that slide along walls at least 1.80 meters in height to where the car is accessible to personnel, or doors that are at least equal to the height of the shaft opening when the latter is less than 1.80 meters; – The doors are constructed of solid panels, metal grills or screens with mesh no larger than one centimeter in size where the car is not equipped with a door, and no larger than three centimeters where the car is equipped with its own door and the distance of the car floor from the door to the shaft is no less than five centimeters; See protocol for notes. – Shaft access doors are each equipped with a safety device that will not permit any movement of the car if the doors are not shut; See protocol for notes. – The cars of elevators and hoists for carrying materials accompanied by persons have walls at least 1.80 meters in height and doors that open inward or that slide along walls that are at least 1.80 meters in height; – Car walls and doors are solid or have openings that are no greater than ten millimeters; See protocol for notes.			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
– Hoists that carry only materials have enclosures or devices that prevent the load from falling or being ejected; – If the elevator and hoist shaftways exceed 0.25 square meters per section, there is a vertical clearance of at least 50 centimeters between the bottom of the shaft and the member beneath the car that protrudes the farthest; – Fixed buffer devices are provided to ensure that the car does not descend below the bottom clearance limit under any conditions; – A minimum vertical clearance of 50 centimeters is ensured, through the use of buffers, above the ceiling of the car at the highest point of its travel; – Hoists used exclusively for carrying materials have operating controls positioned outside the traveling shaft and in a position that cannot be activated by persons inside the car; – A parachute device, to prevent the car from falling if suspending cables or chains break, is provided for the following elevators and hoists: – Elevators and hoists that carry materials and people, where the car is suspended by ropes or chains and the travel distance is more than four meters; – Hoists that carry only materials with a car that is accessible for loading and unloading operations; and – Hoists without cars that are accessible for loading and unloading and have a capacity of at least 100 kilograms; – Elevators and hoists, except those that are manually operated, are provided with an automatic device for stopping the engine apparatus or the movement at the top and bottom of the shaft; – Power-driven elevators and hoists operate with the motor engaged, even during descent, to prevent free-fall; – Gravity hoist cars and platforms that are accessible on landings are equipped with a device that ensures that they are locked in place while loading; and – Manually operated and gravity hoists are provided with braking or control devices that prevent the car or platform from traveling at dangerous speeds? See protocol for notes. Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
12.62 If the facility operates vertical tray, bucket, screw and belt hoists and conveyors that are not subject to European Union conformity requirements, does it have procedures in place to ensure compliance with the following requirements: [Legislative Decree No. 81 of 9 April 2008, Article 70(2) and Annex V, Part II, 3.3.3 and 3.4] – Vertical tray hoists and bucket hoists are installed within shaftways or enclosed conduits equipped with only those openings necessary for loading and unloading; – A stop device capable of bringing the machine to an immediate halt is placed near each loading and unloading opening of the vertical tray hoists; – The vertical tray, bucket, belt and similar hoists, having portions of track placed on an incline, are equipped with an automatic stop device for use when a sudden power failure may result in a reversal of the normal direction of movement; – Screw conveyor casings are equipped with a cover and their loading and unloading openings are effectively protected; – Conveyor loading and unloading openings are protected to prevent persons from falling and to protect workers from dangerous moving parts; – The loading openings of inclined paths (chutes) are surrounded by railings that are at least one meter in height, with the exception of the portion strictly necessary for loading, provided that the upper edge of the beginning of the inclined path is at a height of at least 50 centimeters above the floor level; – The clearance below horizontal or inclined conveyors is barricaded and made inaccessible if, because of the type of material being transported and the type of conveyor, there is a danger of material falling off or of the supporting devices breaking, unless other safety measures against such risks are adopted; and – Revolving platforms are equipped with a locking device? Comments:			
12.63 If the facility operates vertical tray, bucket, screw and belt hoists and conveyors, does it have procedures in place to ensure compliance with the following requirements: [Legislative Decree No. 81 of 9 April 2008, Annex V, Part II, 2.7 through 2.10] – At the end of transport rails, whether on an incline or horizontal, there is an apparatus or other measures are taken to prevent persons from being injured by any vehicles which might derail or disengage from the track;			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
– The devices that connect the conveying machines to each other are constructed in such a way as to make the coupling and uncoupling operations safe and to ensure that the connection is stable; – When in motion, coupling and uncoupling of the conveying machines is prohibited unless the machines are equipped with devices that make such an operation safe and the personnel on duty are experienced in such operations; – Any conveying machines driven by electric motors have a handle capable of being removed or locked on the main switch, or the control switches are located inside a cabinet capable of being locked with a key; – Upon cessation of movement, the drivers of conveying machines remove or lock the handle of the main switch or lock the control cabinet with the key; – At the beginning of a sloping track at a station, all inclined pathways with railings are equipped with automatic locking devices to prevent the carts from derailling and to prevent trains from traveling freely on the track; – At stations or at the lower end of inclined pathways and along the same route as the inclined pathway, there are safety niches where personnel can take refuge, as appropriate on the conditions of the installation; and – Personnel are prohibited from traveling along inclined pathways while the pathways are in use, unless the pathway itself includes tracks or passages wide enough and with the proper apparatus to allow for pedestrians to pass without danger? Comments:			
12.64 If the facility operates vertical tray, bucket, screw and belt hoists and conveyors, does it have procedures in place to ensure compliance with the following requirements: [Legislative Decree No. 81 of 9 April 2008, Article 70(2) and Annex V, Part II, 2.11 through 2.14] – Inclined pathways are equipped with safety devices designed to immediately stop the carts or trains if there is a break-down or slackening of the traction mechanisms, whenever such a stop may be deemed necessary with respect to the length and slope of the route, operating speed, or any other specific conditions of the installation and whenever the pathways are used, even sporadically, to transport people; – If for technical reasons associated with specific features of the installation and its operation it is not possible to utilize a device as described in the previous bullet, the traction and coupling mechanisms on the carts have a safety coefficient of at least eight and the use of inclined pathways to transport people is prohibited; – The traction and coupling mechanisms and safety devices are inspected on a monthly basis;			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
– All tanks for liquid fuel and for compressed gas for later use are stored in a safe place protected from any heat source and from risk of collision; – All mechanical means of transport, if they are to be worker-operated for certain distances, are equipped with suitable handles making driving safe; and – Vehicles that are unloaded by tipping are equipped with devices that prevent accidental tipping and facilitate safe execution of the operations? Comments:			
12.65 Is there a barrier in front of the exits from the premises and at all routes that run directly into a crossroad where other mechanical means of transport are used, to prevent collisions or, if that is not possible, are adequate signals present? [Legislative Decree No. 81 of 9 April 2008, Annex IV, 1.4.14] Comments:			
12.66 If the facility operates vertical tray, bucket, screw and belt hoists and conveyors, does it have procedures in place to ensure compliance with the following requirements: [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 1.4.15 through 1.4.19] – Signals are provided that indicate dangerous conditions in transport areas; – Signals regulating the traffic of the mechanical means of transport on roads or on tracks are properly illuminated during nighttime service; – If transport routes become hazardous for travel due to repair work or because a breakdown has occurred, they are blocked off and signs are posted to indicate the detour; – While repair work or maintenance is conducted on transit routes with tracks for mechanical means of transport, and the traffic has not been halted or the route has not been blocked off, one or more persons are assigned exclusively to signal the approach of the cars to the other workers at their work stations; – Whenever one or more vehicles are operated by mechanical means which cannot be directly monitored by the conductor nor by another person situated in or on one of the vehicles, these vehicles are preceded or accompanied by a person responsible for providing the necessary signals to ensure the safety of personnel; – People are not transported in telpher cars or in other aerial funicular systems built solely for the transport of objects, except to conduct inspections, maintenance or repair, and then only once the proper			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
precautions are taken such as the use of safety belts, the utilization of supplemental hooks from the car to the support cable, and the provision of appropriate signaling devices; and – The area outside the cars (the sides for departure and arrival at the telfer stations) has attached solid metal gratings that meet the following requirements: – Strong enough to keep a person from falling; – Placed no lower than 0.50 meters below the edge of the steering floor; and – Extending out from this floor at least 2 meters? Comments:			
12.67 If the facility has conveying equipment on rails, are the following requirements met: [Legislative Decree No. 81 of 9 April 2008, Article 70(2) and Annex V, Part II, 2.15, 2.16, and 2.17] – Where the entire length cannot be monitored from the driver's position, telfers have a device placed at each station and at each loading and unloading site which sends operational signals from the main station; and – Lubrication of the cables bearing telfers and other similar apparatus is conducted automatically by means of a device attached to the proper car? Comments:			
Confined Spaces			
See protocol for notes.			
12.68 Are workers prevented from entering confined spaces where hazardous gases may be present unless the atmosphere has been determined to be safe or ventilation or other means has ensured a proper atmosphere? [Legislative Decree No. 81 of 9 April 2008, Article 66] Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
12.69 If the atmosphere inside confined spaces is suspected to be hazardous, does the facility ensure that the following requirements are met: [Legislative Decree No. 81 of 9 April 2008, Article 66] – Workers wear safety belts; – Workers are controlled and supervised for the duration of their activities; – If necessary, workers are provided with personal protective equipment (PPE); and – The entrance to such spaces is wide enough to allow an injured worker to be recovered? Comments:			
12.70 Are workplaces protected, so far as is technically possible, by preventing or minimizing, as necessary, the formation of harmful or hazardous concentrations of flammable, asphyxiating or toxic gases, vapors or explosive dusts and is adequate ventilation provided to prevent the buildup of such concentrations? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 2.1.8.1] Comments:			
12.71 Are work areas and passages equipped with fire detectors and other monitors to indicate the presence of hazardous levels of vapors and gases or other dangerous conditions? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 2.1.8.2] Comments:			
12.72 If the facility utilizes pipes, ducts and vessels such as tanks and cisterns, which workers must enter for inspections, repairs, maintenance or other reasons associated with the operations or plant at the facility, is the equipment fitted with access openings measuring at least 30 by 40 centimeters or having a diameter of not less than 40 centimeters? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.1] Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
12.73 Prior to allowing any workers to enter pipes, ducts or vessels, does the work supervisor ensure that the confined space contains no harmful gases or vapors and that the interior temperature is not harmful? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.2.1] See protocol for notes. Comments:	☐	☐	☐
12.74 Does the facility have procedures in place to ensure that all valves and other devices in ducts connected to vessels that are to be inspected, repaired or maintained are closed, blocked, and have notices affixed to the closing or sealing devices so as to prohibit their operation or movement? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.2.2] See protocol for notes. Comments:	☐	☐	☐
12.75 Where it is not possible to be absolutely certain that no harmful gases or vapors are present, or where it is difficult to access the bottom of the confined space, does the facility ensure that any worker entering the confined space wears a safety belt with rope of sufficient length and, where necessary, equipment that will allow the worker to breathe normally? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 2.1.6.2 and 3.2.4] Comments:	☐	☐	☐
12.76 Do facility procedures ensure that, whenever a worker is performing work inside a confined space, a second employee is stationed outside near the access opening? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.2.3] Comments:	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
12.77 Where it is not possible to be absolutely certain that no flammable or explosive gases, vapors, or dusts are present in a confined space, does the facility ensure that steps are taken to prevent fire and explosion hazards, such as prohibiting open flames, incandescent elements, tools of ferrous materials or shoes with studs? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.3] See protocol for notes. Comments:			
Tanks and Vessels			
12.78 Does the facility ensure that open tanks, cisterns and vessels with edges at the same level as, or less than 90 centimeters above, the floor level or the level of the working platform are, regardless of the liquid or the substance they contain, protected on all sides by guards of not less than 90 centimeters in height in the form of either a solid wall or at least two railings? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.4.1] See protocol for notes. Comments:			
12.79 If, due to working requirements or installation conditions, the guards described in Question 12.78 cannot be applied, does the facility ensure that the top openings of the vessels are provided with substantial covers or other guards to prevent workers from falling in? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.4.2] Comments:			
12.80 Where fixed ladder cannot be provided for access to cisterns, vats, tanks or similar units that are over two meters in depth and have no openings that provide access to the bottom, are removable ladders with retaining hooks provided for access? [Legislative Decree No. 81 of 9 April 2008, Article 63 and Annex IV, 3.5] Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
Specialized Work Equipment			
12.81 Are work areas, including access areas, for free fall drop hammers used for the crushing of cast iron, scrap metal or other materials completely surrounded by sturdy walls to prevent the ejection of fragments of material? [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 5.1.1, 5.1.2] Comments:	☐	☐	☐
12.82 For work areas for free fall drop hammers used for the crushing of cast iron, scrap metal or other materials, is operation of the machinery conducted from outside the enclosure or otherwise suitably protected from the work area of the machinery? [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 5.1.3] Comments:	☐	☐	☐
12.83 Are facilities where there is violent ejection of material in production, such as steel mills, provided with safety barriers to protect workers? [Legislative Decree No. 81 of 9 April 2008, Article 71 and Annex VI, 5.2.1] See protocol for notes. Comments:	☐	☐	☐
Health and Safety Signs			
See protocol for notes.			
12.84 If hazards identified by the facility's risk assessment cannot be prevented by collective protection measures, methods or procedures for organization of work, has the facility used safety signage in compliance with Annexes XXIV to XXXII (see Appendix 12-B) to address hazards? [Legislative Decree No. 81 of 9 April 2008, Article 163(1)] See protocol for notes. Comments:	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
12.85 Do all safety and health signs used at the facility meet the minimum requirements set forth in Appendix 12-B? [Legislative Decree No. 81 of 9 April 2008, Article 163(1)] Comments:	☐	☐	☐
12.86 If the facility has traffic ways within the facility, are circulation routes marked in accordance with Annex XXXVIII (see Appendix 12-B)? [Legislative Decree No. 81 of 9 April 2008, Article 163(3)] Comments:	☐	☐	☐
12.87 Where it is necessary to use signs that are not covered Annexes XXIV through XXXII (see Appendix 12-B), has the facility used signs according to best practices, the special requirements of the risk, and experience? [Legislative Decree No. 81 of 9 April 2008, Article 163(2)] Comments:	☐	☐	☐
12.88 Has the facility informed workers and/or their representatives of all the measures to be taken concerning the use of health and/or safety signs at work? [Legislative Decree No. 81 of 9 April 2008, Article 164] Comments:	☐	☐	☐
12.89 Have workers received suitable training regarding health and safety signs, including specific instructions, so that they understand the meaning of signs, especially when these involve gestures or words, and including the general and specific behavior to be adopted? [Legislative Decree No. 81 of 9 April 2008, Article 164] Comments:	☐	☐	☐

		<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
		<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
12.90		☐	☐	☐
	Comments:			
12.91		☐	☐	☐
	Comments:			
12.92		☐	☐	☐
	Comments:			

To sort QC results, please use the Sort By options

located on the Audit Quick Check Toolbar

Be sure your cursor is within the checklist before using this option.

13.0 FIRE SAFETY

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

– I. Means of Egress	13-6
– II. General Fire Protection Requirements	13-6
– III. Notification Requirements	13-13
– IV. Storage of Flammable Materials	13-13
– V. Evacuation Requirements	13-14
– VI. Fire Protection/Water Supply	13-16
– VII. Fire and Explosion Hazards	13-20
– VIII. Fire Extinguishers/Fire Fighting Equipment	13-23
– IX. Permanent Fire Extinguishing Devices	13-25
– X. Signaling and Alarm Systems	13-26
– XI. Technical Systems and Devices	13-27

Tables or Appendices referenced in the protocol are located at the end of this section, along with a link to our audit scorecard, entitled [Audit Quick Check](#). This protocol applies to facilities located throughout Poland.

Key Legislation and Regulations

Key legislation and regulations covered in this protocol are noted as follows:

National

- **The Act of 24 August 1991 on Fire Protection [Dz. U. 2002, No. 147, item 1229, as last amended by Dz. U. 2010, No. 57, item 353] (w sprawie ogłoszenia jednolitego tekstu ustawy o ochronie przeciwpożarowej), 24 August 1991 as amended through 19 February 2010.** This Act establishes general rules on fire protection and protection against natural disasters, including obligations of owners of construction projects, buildings, and areas.
- **The Ordinance of 26 September 1997 on General Work Health and Safety Regulations [Dz. U. 1997, No. 169, item 1650, as last amended by Dz. U. 2008, No. 108, item 690] (w sprawie ogólnych przepisów bezpieczeństwa i higieny pracy), 26 September 1997 as amended through 6 June 2008.** This Ordinance establishes general regulations for work safety and hygiene, including requirements for means of egress.
- **The Ordinance of the Minister of Infrastructure of 12 April 2002 Regarding Technical Conditions for Buildings and their Locations [Dz. U. 2002, No. 75, item 690, as last amended by Dz. U. 2010, No. 239, item 1597] (w sprawie warunków technicznych, jakim powinny odpowiadać budynki i ich usytuowanie), 12 April 2002 as amended through 10 December 2010.** This Ordinance provides definitions of terms used in other Ordinances included in this protocol section.
- **The Ordinance of the Minister of Internal Affairs and Administration of 24 July 2009 on Fire Safety Water Supply and Fire Roads [Dz. U. 2009, No. 124, item 1030] (o ochronie przeciwpożarowej), 24 July 2009.** This Ordinance establishes requirements to ensure adequate fire water supplies, fire water piping and pumping systems and fire roads.
- **The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas [Dz. U. 2010, No. 109, item 719] (w sprawie ochrony przeciwpożarowej budynków, innych obiektów budowlanych i terenów), 7 June 2010.** This Ordinance establishes prohibited activities and obligations related to fire protection, evacuation plans, fire installations, pipeline installations, fire systems and equipment, and technical facilities.

- **The Ordinance of the Minister of the Economy of 8 July 2010 on the Minimum Requirements Relating to the Health and Safety of Workers Employed at Work Stations with Potentially Explosive Atmospheres [Dz. U. 2010, No. 138, item 93]¹ (w sprawie minimalnych wymagań, dotyczących bezpieczeństwa i higieny pracy, związanych z możliwością wystąpienia w miejscu pracy atmosfery wybuchowej), 8 July 2010.** This Ordinance provides minimum health and safety requirements at workplace, where due to circumstances of location, equipment, substances, mixtures there is a potential for presence of an explosive atmosphere.

European Union

None.

Web links to documents from the Polish Sejm's Internet Legislation System (i.e., those beginning with <http://isap.sejm.gov.pl/>, last accessed February 2011) are provided throughout this document. Clicking these links will take the user to the homepage. Click "wyszukiwanie" on the left side of the screen, and then enter the year (Dz. U.), number (No.) and item of the legislation in the "Rok," "Numer," and "Pozycja" fields, respectively, and click "Szukaj" or press return.

European Union legislation can be obtained by performing a "Natural Search" at: http://eur-lex.europa.eu/RECH_naturel.do (last accessed February 2011). Specific legislation is found by selecting the legislation type (i.e., Regulation, Directive or Decision) and entering the 4-digit year in the "Enter the Year" field (usually indicated as the first number before the "/" in the titles of Directives and Decisions and the second number after the "/" in the titles for Regulations) and the document number in the "Enter Document Number" field (the document number may be found in the title as the number that is separated from the year by a "/"). It should be noted that prior to the year 2000 many documents used a 2-digit year format in the document title. Once the document has been located, individual amendments to, as well as consolidated versions of, the legislation can be viewed by selecting the "Bibliographic Notice."

This protocol section updates information contained in the prior version (2009). Specific additions, deletions and other changes made relative to the earlier version of the protocol are summarized in Appendix 13-A.

Topics and Questions

Notes: During the planning and preparation of a facility for use, the facility must comply with the ordinances set forth by the Minister of Internal Affairs and Administration regarding the specific scope, methods, prevention systems and codes pertaining to fire and that applied for the given project(s). [\[The Act of 24 August 1991 on Fire Protection, Articles 6.1 and 6.2\]](#) The specific ordinances referenced are not specified in [The Act of 24 August 1991 on Fire Protection](#).

The facility is also responsible for ensuring that fire prevention principles are applied to the use of machines, devices and other products used at the facility, including those that were obtained from abroad. [\[The Act of 24 August 1991 on Fire Protection, Articles 6.3 and 6.4\]](#)

The following definitions apply to terms used throughout this protocol section:

- “Explosion atmosphere” means the area in which there may be a mixture of explosive substances mixed with air or other oxidizing gases, with a concentration of between the lower and upper explosion limits; [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 2.1\(6\)\]](#)
- “Fire zone” is a building or its parts, separated from other buildings or from other parts of a building, with elements of fire resistant separation and stretches of open space of a designated width; [\[The Ordinance of the Minister of Infrastructure of 12 April 2002 Regarding Technical Conditions for Buildings and their Locations, Section 226\]](#)
- “Flammable hazardous materials” are the following types of materials: [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 2.1\(1\)\]](#)
 - Flammable gases;
 - Flammable liquids with a flashpoint below 328.15 K (55°C);
 - Substances which in contact with water, emit flammable gases;
 - Materials igniting spontaneously in air;
 - Explosives and pyrotechnics;
 - Materials that undergo spontaneous decomposition or polymerization;

- Materials susceptible to spontaneous combustion; and
- Materials other than those mentioned above, if their storage processing or other use may cause a fire;
- “Other local hazard” is an event, resulting from development or nature, which is neither fire nor natural disaster, and which poses a danger or threat to life, or health, property or the environment, and for which the prevention and removal of the consequences does not require using special means; and [\[The Act of 24 August 1991 on Fire Protection, Article 2\]](#)
- “Regulations on Technical Building Conditions” in this subsection refers to the *Regulations of the Minister of Infrastructure of 12 April 2002 on Technical Conditions to be Met by Buildings and Their Sites* (Dz. U. 2002, No. 75, item. 690); see the Polish Sejm’s Internet Legislation System website indicated at the end of this section’s legislation list to access these Regulations.

Buildings and parts of buildings are divided into different fire zones in the following categories, based on use: [\[The Ordinance of the Minister of Infrastructure of 12 April 2002 Regarding Technical Conditions for Buildings and their Locations, Section 209\]](#)

- “PM buildings” are production or manufacturing and storage buildings, or parts of buildings, as well as boiler rooms, garages, pump rooms, transformer stations, etc; and
- “ZL buildings” are residential and public use buildings, or parts of buildings, which are defined based on their hazard to people, and may fit one or more of the following categories:
 - “ZL I” - buildings with areas for the simultaneous presence of more than 50 people who are not the permanent users, and especially those not designed for people with limited mobility;
 - “ZL II” - buildings for the use of people with limited mobility like hospitals, day care centers, preschools or kindergartens, and nursing homes;
 - “ZL III” - buildings for public use, not specified as ZL I or II;
 - “ZL IV” - residential homes; and
 - “ZL V” - multiple-unit apartment buildings.

Open storage areas are treated as PM buildings. [[*The Ordinance of the Minister of Infrastructure of 12 April 2002 Regarding Technical Conditions for Buildings and their Locations, Section 271.13*](#)]

Required distances between buildings of the types listed above are provided in Table [13-1](#).

I. Means of Egress

- 13.1** Does the facility ensure that work areas cannot be locked in a manner that prevents workers from exiting? [[*The Ordinance of 26 September 1997 on General Work Health and Safety Regulations, Section 23*](#)]

Notes: A work space which must be locked to prevent entry of unauthorized people must be equipped with locks that can be opened from the inside without using keys. In such a situation, there must be a provision for informing workers inside such spaces about possible outside hazards. [[*The Ordinance of 26 September 1997 on General Work Health and Safety Regulations, Section 23*](#)]

II. General Fire Protection Requirements

Notes: Physical and legal persons, organizations or institutions that utilize the environment, buildings, facilities or land are obliged to protect them against fire and other local hazards. [[*The Act of 24 August 1991 on Fire Protection, Article 3.1*](#)]

- 13.2** If the facility is responsible for fire protection at a building or facility or on a piece of land, does it comply with the following requirements: [[*The Act of 24 August 1991 on Fire Protection, Article 4.1*](#)]

- Follows fire fighting technical construction, installation and technological requirements;

Notes: No further details are provided in the legislation.

- Supplies the building, facility or land with fire fighting equipment and fire extinguishers, in accordance with local requirements;
- Ensures that fire fighting equipment and fire extinguishers are maintained and repaired to ensure proper functioning;
- Ensures the safety of people present in the building or facility or on the land, and provides for their evacuation in the event of emergencies;

- Prepares buildings, facilities or land for rescue operations;
- Informs workers about the fire regulations; and
- Determines procedures to be employed in case of fire, natural disaster or other local hazard?

Notes: It is the responsibility of the manager or the user to conduct these fire fighting duties on the basis of a legal civil agreement between the management of the building, facility or land, and the user. If such an agreement has not been reached, the owner of the building, facility or land is responsible for the fire fighting duties. [[The Act of 24 August 1991 on Fire Protection, Article 4.1a](#)]

Activities pertaining to fire protection must be conducted by persons who have appropriate qualifications. [[The Act of 24 August 1991 on Fire Protection, Article 4.2](#)]

People conducting activities pertaining to fire protection, including the prevention and spread of fire, who are not employed by the fire department, must be qualified as follows: [[The Act of 24 August 1991 on Fire Protection, Article 4.2.2a](#)]

- Hold a higher education degree and have completed fire protection specialist training;
- Hold a higher education degree in the field of fire safety engineering; or
- Hold a professional title of fire fighting engineer.

Workers may also qualify by taking part in training in other EU countries. [[The Act of 24 August 1991 on Fire Protection, Article 4.2.2a](#)]

People conducting activities specified in this question must have at least a high school degree and have completed training for fire protection inspectors, or have a title of professional fire protection technician. Workers may also qualify by taking part in training in other EU countries. [[The Act of 24 August 1991 on Fire Protection, Article 4.2.2b](#)]

Additional details pertaining to the qualifications of fire fighting units (including those found at industrial facilities) are set forth in Chapter 3 (entitled “Organization of Fire Protection”) of [The Act of 24 August 1991 on Fire Protection](#). The unified Polish text of this Act can be accessed at the Polish Sejm’s Internet Legislation System website indicated at the end of this section’s legislation list. Note that this Act contains certain transitional extensions and exceptions applicable to members of the fire fighting units.

- 13.3** If there are no local fire services in the facility or its buildings and the facility is required to have a fire alarm system, has it installed signaling and alarm devices that are connected to the nearest fire station? [[The Act of 24 August 1991 on Fire Protection, Chapter 2, Article 5.1](#)]

Notes: The Act does not specify what type of facility is required to have an alarm system.

- 13.4** Does the facility ensure that fire protection requirements are fulfilled by use of appropriate equipment, fire fighting and rescue devices, and fire extinguishers before it begins the use of a new, renovated or altered building, facility, piece of land, machine or device, or the use of new product? [[The Act of 24 August 1991 on Fire Protection, 6.5](#)]

- 13.5** Does the facility have a certificate from the Fire Department's (Ministry of Internal Affairs) National Research and Development Unit stating that its fire protection equipment is approved for use? [[The Act of 24 August 1991 on Fire Protection, Article 7.1 and 7.2](#)]

Notes: The certificate described in this question is not valid for more than five years. [[The Act of 24 August 1991 on Fire Protection, Article 7.3](#)]

A label issued by the National Research and Development Unit must be affixed to the approved fire protection equipment. [[The Act of 24 August 1991 on Fire Protection, Article 7.7](#)]

- 13.6** Does the facility prohibit, on its premises and in adjacent areas, the use of open fire, smoking tobacco and other factors that may cause ignition of materials in the following areas: [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1\(1\)](#)]

- An explosive atmosphere, with the exception of equipment that is designed for that purpose; and

Notes: Specially-designed equipment addressed in the preceding bullet must comply with the requirements set forth in *The Ordinance of the Ministry of Economy of 22 December 2005 Concerning Basic Requirements for Equipment and Protective Systems Designed for the Use in Explosion Hazard Zones* (Dz. U. 2005 No. 263, item 2203). This Ordinance is beyond the scope of this protocol, but may be accessed at the Polish Sejm's Internet Legislation System indicated at the end of this section's legislation list.

- Locations containing flammable hazardous materials posing a fire hazard?

13.7 Does the facility, on its premises and in adjacent areas, prohibit the following activities which can cause or enhance the spread of a fire or hamper rescue operations: [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1(2)-4.1(6)*]

- Using installations, equipment and tools that malfunction, not using them in accordance with their intended purpose, or not using them in accordance with the manufacturer's instructions and without periodic inspection, if these actions may cause fire or spread fire;
- Garaging automotive vehicles in facilities and locations that are not designed for this purpose without first emptying the tanks of fuel and disconnecting the vehicles' batteries;
- Heating tar and other materials by means of an open fire at a distance of less than 5 meters from the facility, adjacent storage sites, or storage areas containing flammable materials;

Notes: It is permitted to conduct these activities on roofs that are made of fire resistant materials, and in other cases, only by means of special heating devices.

- Starting bonfires, disposing of hot ashes, or burning garbage in locations that may ignite adjacent facilities or flammable materials; and

Notes: These activities must be conducted at least 10 meters away from adjacent facilities or flammable materials.

- Storing of flammable materials, including plant waste and branches, at a distance of less than 4 meters from the border of the building lot?

13.8 Does the facility, on its premises and in adjacent areas, prohibit the storage of flammable materials at a distance less than 0.5 meters from the following equipment: [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1(8)*]

- Devices and installations whose surfaces can become hotter than 100 degrees C;
- Cable lines with voltages higher than 1 kV; and
- Grounding lines, active transformers, electric power lines, switchgear, and electrical sockets with a voltage above 400 V?

13.9 Does the facility, on its premises and in adjacent areas, prohibit the following activities involving electrical equipment: [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1\(7\), \(9\) and \(10\)\]](#)

- Use of electrical heating devices placed directly on flammable surfaces, except when those devices are used according to the manufacturer's instructions;
- Use of lighting shields made of flammable materials, with the exception of materials that are difficult to ignite, unless they are separated from bulbs by a distance of at least 0.05 meters; and
- Installation of lighting covers or other electrical equipment such as circuit breakers, switches and electrical outlets directly on flammable surfaces, unless their construction ensures protection against ignition?

13.10 Does the facility, on its premises and in adjacent areas, prohibit the following activities related to evacuation of the premises and access to emergency equipment: [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1\(11\) through \(16\)\]](#)

- Storage of flammable materials along emergency evacuation routes, or placement of objects in those evacuation routes in a way that would decrease the height or width of the routes below the required dimensions;

Notes: The required dimensions for evacuation routes are specified in the *Regulations on Technical Building Conditions*. (See the web link provided in the introductory notes to this section.)

- Storage of flammable materials or containers for combustible gas (regardless of their fill-level) in attics, general use passages or basements;
- Closing emergency exit doors during an emergency or fire;
- Locking of doors or fire doors to prevent their automatic closure in the event of a fire;
- Installing interior design elements, installations and equipment in a manner that reduces the dimensions of the escape route below the value required by the *Regulations on Technical Building Conditions*;

- Use as an evacuation route of a theater or other hall in which there is simultaneous traffic of people to and from the waiting area/rooms; and
- Prevention or obstruction of access to the following items:
 - Fire extinguishers and fire suppression equipment,
 - Anti-explosive devices;
 - Sources of water to be used for fire extinguishing;
 - Devices that start or control extinguisher equipment and other installations that affect the fire prevention capabilities of the facility;
 - Emergency exits or windows for the fire fighting crew;
 - Circuit breakers, electrical control panels, and main gas valves; and
 - External screens or shutters which open outwards?

13.11 Does the facility prohibit the filling of liquid gas cylinders at fuel stations, liquid gas stations, and other locations not designed for that purpose? [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1(19)*]

13.12 Does the facility prohibit the distribution and transport of petroleum products in locations not designed for that purpose? [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1(20)*]

13.13 Does the facility ensure that the following requirements are met in buildings and in open storage places: [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.2*]

- Fire fighting equipment is maintained in working condition;
- Buildings are equipped with fire emergency electrical shut-off switches;
- Telephone numbers and instructions for emergency response actions are posted in visible places in case of fire; and

- Signs are posted to indicate the locations of the following:
 - Evacuation routes and exits and areas where, according to the *Regulations on Technical Building Conditions*, two exits are required;

Notes: Residential single family homes are exempt from this requirement.
 - Fire prevention devices;
 - Control systems for fire prevention devices;
 - Fire emergency electrical shut-off switches, gas main valves, and areas of flammable materials;
 - Areas containing materials associated with fire hazards;
 - Evacuation ladders and slides (rescue sleeves);
 - Containers with escape masks/respirators;
 - Evacuation meeting gathering points;
 - Keys for emergency exits;
 - Hoists for rescue crews;
 - Fire protection water reserves;
 - Fire doors and routes; and
 - Any other areas that are classified as hazardous?

Notes: Safety signs must comply with European Union Standards. [[*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.2\(4\)*](#)]

- 13.14** Does the facility ensure that a safety zone at least 2 meters wide with a surface made of fire resistant materials or clean fill is maintained around storage sites that may pose a fire hazard? [[*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.3*](#)]

- 13.15** Does the facility ensure that fire roads and fire lanes are maintained to allow use by fire department? [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 5](#)]

Notes: Facilities that allow public access must have fire safety instructions; see Section 6 of [The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas](#) for the full details on this requirement, which is beyond the scope of this protocol. [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 6](#)]

III. Notification Requirements

- 13.16** Does the facility ensure that individuals who notice a fire, natural disaster or other local hazard immediately report such events to the following: [[The Act of 24 August 1991 on Fire Protection, Article 9](#)]

- Persons who are present in the danger zone; and
- Fire and police stations; or
- The Sub-prefect and the head of the village?

IV. Storage of Flammable Materials

- 13.17** If the facility stores flammable materials against its walls, does it meet the following conditions: [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.4](#)]

- The materials are not flammable hazardous materials (defined in the introductory notes to this section);
- The storage area does not exceed the fire zone established for the facility;
- Access to the facility is secured in the event an emergency;
- A minimum safe distance from other facilities is maintained; and
- A minimum of 5 meters is maintained from a fire route?

- 13.18** If the facility has a production or warehouse facility where combustible dust may settle on surfaces, does it ensure that regular cleaning is conducted? [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.6*]

Notes: The cleaning must be in accordance with the principles set out in Polish Standards. [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.6*]
However, the specific standards are not indicated in the Ordinance.

V. Evacuation Requirements

Notes: Areas in buildings and other structures and on pieces of land that are designed for people must be provided with emergency evacuation systems. In order to ensure the proper evacuation of people from buildings and facilities, the facility must take into consideration the number of people present, their physical condition, and the size, structure, and function of a building. [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 15.1*]

- 13.19** Does the facility take the following steps to provide proper fire protection means for evacuation: [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 15.1*]

- Secures the proper number and width of the exits;
- Uses evacuation paths of permissible length, width, and height;

Notes: The required dimensions for evacuation routes are considered technical construction requirements and are not specified in the Ordinance. [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 15*]

- Secures safe evacuation passages that have proper materials and structure against fire;
- Secures evacuation passages protected against smoke, including by the use of devices or equipment and/or other technical measures and installations to ensure the removal of smoke;

- Provides emergency lighting; and
- Ensures that there are audible emergency warning signals and voice announcements in buildings for which it is a requirement?

Notes: The conditions mentioned in this question are regulated by technical building regulations/building codes. [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 15.2](#)]

The Ordinance does not specify for which buildings audible warning signals and voice announcements are required.

- 13.20** Does the facility evaluate the conditions of its buildings to ensure that they meet the safety criteria to enable evacuation in the event of a fire and does it remedy any life-threatening conditions identified in the list noted below? [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 16.3](#)]

Notes: Existing buildings are considered life-threatening for the evacuation of people in the following conditions: [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 16.1-16.2](#)]

- The width of the aisles, access or egress pathways, stairways and/or landings used for evacuation, are not at least two thirds of the values specified in the *Regulations on Technical Building Conditions*;
- The length of the aisles and escape routes are more than twice the values required by the *Regulations on Technical Building Conditions*;
- The presence in the fire zone qualified for the category of risks to humans and ZL I, ZL II or V (defined in the introductory notes to this section), or on escape routes of the following:
 - If a ceiling or suspended ceiling (or its insulation) is made of flammable material or a material that becomes molten under the influence of fire, or a floor covering that is readily flammable; and/or
 - If the wall surface is constructed of flammable material along the fire evacuation route, unless two different escape routes are provided;

- If a fire escape stairwell is not provided in a high-rise building in the manner specified in the provisions of the *Regulations on Technical Building Conditions*;
- Evacuation routes are unprotected against infiltration of smoke as specified in the provisions of the *Regulations on Technical Building Conditions*; and
- If the area lacks the required emergency lighting for the area of the fire qualified for the category of risks to humans and ZL I, ZL II or V, or in the escape route leading from the area outside the building.

13.21 Does the facility conduct a test of the operation of the fire evacuation system at least every two years if it meets the following criteria: [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 17.1\]](#)

- Has a fire safety zone that is not classified as a ZL IV (defined at the beginning of this protocol section); and
- Is designated for more than 50 people who are permanent users of the building?

13.22 Does the facility notify the head of the fire department concerning the scheduled test described in Question [13.21](#) at least one week prior to the test date? [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 17.4\]](#)

VI. Fire Protection/Water Supply

Notes: Buildings must be equipped with one of the following fire protection water uptake installations and with a corresponding water supply: [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 18.1\]](#)

- “Hydrant 25” - Internal hydrant with semi-rigid hose with a diameter of 25 mm;
- “Hydrant 33” - Internal hydrant with semi-rigid hose with a diameter of 33 mm;
- “Hydrant 52” - Internal hydrant with a hose that is 52 mm diameter, folded flat; and/or
- “Valve 52” - Hydrant valve (without a hose) placed on a vertical water pipe in high-rise buildings, and which conforms to Polish Standards.

Internal hydrants must comply with the requirements of Polish Standards which conform to the European Standards and must have a minimum water supply that is sufficient for one hour of operation. [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 18.2 and 18.4](#)]

13.23 Does the facility ensure that that Hydrant 25 equipment is installed appropriately for the ZL category of the building, as follows: [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 19.1, 1\), 2\)](#)]

- On each floor of high-rise buildings except buildings that are exclusively ZL IV; and
- On each floor of a low- and medium-height building, other than temporary buildings, as follows:
 - Categories ZL I, II and V buildings, with a surface area of more than 200 square meters;
 - Category ZL III in medium-height buildings exceeding 200 square meters;
 - Category ZL III medium-height buildings, where the ZL III only applies to the ground floor and the higher floors are exclusively ZL IV, with an surface area exceeding 1,000 square meters; and
 - Low-height building with a surface area exceeding 1,000 square meters?

Notes: No further descriptions of high-rise, medium-height, and low-height buildings are provided in the Ordinance.

13.24 If the facility has a single level garage with more than 10 parking spaces or a multi level garage, is it equipped with a Hydrant 33? [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 19.2](#)]

13.25 Does the facility ensure that Hydrant 52 equipment is installed in the following locations: [The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 19.3]

- Production or storage fire zones with a fire load density exceeding 500 MJ/m² and areas exceeding 200 square meters;
- Production or storage fire zones with a fire load density not exceeding 500 MJ/m² in which there are areas exceeding 100 square meters with a fire load density exceeding 1,000 MJ/m²; and
- Near the entrances to storage areas or technical areas exceeding 200 square meters with a fire load density exceeding 500 MJ/m² and located in one of the following fire zones: ZL I, II, III, and V, which are in a low- or medium-height buildings?

Notes: A Hydrant 33 may be used in areas in the fire zones referred to in the first bullet to this question or the last bullet when fire load density in these zones and the storage facilities or technical area does not exceed 1,000 MJ/m² (i.e., between 500 and 1,000 MJ/m²). [The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 19.4]

13.26 Does the facility ensure that Valve 52 and Hydrant 52s are available along corridors and, in particular, in the following locations: [The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 20.1]

- At the entrances to buildings and stairwells on each floor of the building;
- In the aisles and corridors, including the lobbies and corridors of each floor in high rise buildings;
- At the entrances to the attic areas; and
- At the exits to open spaces or exits from production and storage facilities, in particular where there is a risk of explosion?

13.27 Does the facility ensure that the reach of any Hydrant 25 and/or Hydrant 52 equipment encompasses the entire surface of the protected building, fire zone or area, and specifically includes the following: [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Sections 18. 2 and 20.3*]

- The length of the height of the internal hydrant hose is compliant with the corresponding requirements set forth in the Polish and EU standards (no further details are provided in the Ordinance); and
- The effective range of the fire extinguishing streams are as follows:
 - 3 meters for conically dispersed streams in fire zones classified as hazard ZL and located in buildings with more than one storey; and
 - 10 meters in any buildings other than those specified in the preceding sub-bullet?

Notes: In production and storage areas in which the closest emergency exit is located at a distance of greater than 30 meters, it is allowable (but not required) to equip a Hydrant 52 with an additional hose, as addressed in this question. [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 20.4*]

Notes: In addition to the requirements covered in this protocol section referencing *The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings*, the Ordinance contains additional detail that is beyond the scope of this protocol, including on the following topics:

- Additional requirements for the locations of valves and hydrants, water supply and water pressure and piping - Chapter 5; and
- Technical requirements on the operation of fire extinguishers and fire extinguisher systems and fire alarms – Chapter 6.

See <http://isip.sejm.gov.pl/Download?id=WDU20101090719+2010%2406%2430&type=2> (last accessed in March 2011) for the text of *The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas*.

13.28 If the facility has a fire zone (e.g., ZL I, defined in the introductory notes to this section) that is greater than 1,000 m², has it evaluated its fire fighting infrastructure to ensure it meets with the requirements of [The Ordinance of the Minister of Internal Affairs and Administration of 24 July 2009 on Fire Safety Water Supply and Fire Roads](#), and in particular, with regard to the following: [[The Ordinance of the Minister of Internal Affairs and Administration of 24 July 2009 on Fire Safety Water Supply and Fire Roads, Chapters 2-7](#)]

- The supply of fire water available;
- The fire water piping and pumping system; and
- Fire roads?

Notes: For the full text of [The Ordinance of the Minister of Internal Affairs and Administration of 24 July 2009 on Fire Safety Water Supply and Fire Roads](#) see the Polish Sejm's Internet Legislation System indicated at the end of this section's legislation list.

VII. Fire and Explosion Hazards

13.29 Does the facility take the following actions before beginning work that may involve a fire or explosion hazard: [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 36.1](#)]

- Evaluates the fire hazard where the work will be performed;
- Determines the actions necessary to prevent fire and explosions from occurring or spreading;
- Designates people responsible for appropriate preparation of the work area and for securing the area once the work is complete;
- Ensures that the work is performed by people who are authorized and qualified; and
- Informs the workers of existing fire hazards in the area and concerning the actions required to prevent fire or explosion?

13.30 Does the facility ensure it observes the following safety measures when conducting work that may involve a fire or explosion hazard: [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 36.2\]](#)

- Protects against ignition of combustible materials present in the workplace and in adjacent areas, including the structural elements and technical installations found within its buildings;
- Ensures that the concentration of vapors or gases in a mixture with air where hazardous work (with regard to its fire or explosion potential) is conducted does not exceed 10% of the lower explosion limit;
- Ensures the concentration of vapors or gases in a mixture with air where work relating to the use of flammable liquids or flammable gases previously performed conducted does not exceed 10% of the lower explosion limit;
- Installs equipment that eliminates all fire sources;
- Inspects the place where the work was performed and adjacent areas after completion of the work; and
- Uses only properly functioning equipment and fire-safe equipment?

13.31 If processes are conducted with materials that can produce an explosive mixture, or in which such materials are stored, does the evaluation in Question [13.29](#) include the identification and designation of explosion hazard zones, and the identification of factors that may initiate a spark in them? [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 37.1\]](#)

Notes: The classification of explosion hazard zones is determined by use of *The Ordinance of the Minister of the Economy, Labor and Social Policy of 29 May 2003 on the Minimum Requirements Relating to the Health and Safety of Workers Employed at Work Stations with Potentially Explosive Atmospheres*, Dz. U. 2003, No. 107, item 1004. [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 37.5\]](#)

“Explosion hazard zones” refer to areas in which there is a possibility of the formation of an explosive mixture generated from the accumulation of flammable gases, vapors, or dusts which, upon explosion, could cause pressure exceeding 5 kPa. [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 33.5\]](#)

See the appendix to [The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas](#) (available as indicated in the note preceding Question [13.28](#)) for Guidelines on determining the increase of pressure in a room that could be caused by explosion. [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 33.6\]](#)

13.32 Does the facility ensure that it designates the explosion hazard zone in a given space if the space contains an explosive mixture occupying at least 0.01 cubic meters of the area? [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 33.7\]](#)

Notes: Explosion hazard zones are classified as follows: [\[The Ordinance of the Minister of the Economy of 8 July 2010 on the Minimum Requirements Relating to the Health and Safety of Workers Employed at Work Stations with Potentially Explosive Atmospheres, Section 5.1\]](#)

- “Z0” - zone in which an explosive mixture of gases, vapors or mists exists constantly, frequently, or for a long period of time under normal work conditions (e.g., inside containers, pipes, etc.);
- “Z1” - zone in which an explosive mixture of gases, vapors or mists may exist under normal work conditions (e.g., immediately surrounding Z0, immediately surrounding filling areas to tanks);
- “Z2” - zone in which there is no probability of the existence of an explosive mixture of gases and vapors under normal work conditions, and when it occurs, it is for a short time;
- “Z20” - zone in which an explosive mixture of dusts occurs under normal work conditions constantly, frequently, or for a long period of time under normal work conditions (e.g., inside containers, pipes, etc.);
- “Z21” - zone in which an explosive mixture of dusts may occasionally occur under normal work conditions; and
- “Z22” - zone in which there is no probability of the existence of an explosive mixture of dusts, and when it occurs, it is for a short time.

Dust precipitation and accumulation must be taken into consideration when classifying areas into explosion hazard zones. [*The Ordinance of the Minister of the Economy of 8 July 2010 on the Minimum Requirements Relating to the Health and Safety of Workers Employed at Work Stations with Potentially Explosive Atmospheres, Section 5.2*]

Polish Standard EN 1127-1:2007 on Explosive Atmosphere, Explosion Prevention, and Protection from Explosion: Basic Definitions and Methodologies is not legally binding, however the auditor may wish to purchase a copy of this Standard to enhance the performance of the audit. This Standard may be purchased at: <http://www.narzedziownie.pl/> (last accessed in February 2011).

VIII. Fire Extinguishers/Fire Fighting Equipment

- 13.33** Does the facility ensure that areas and buildings are equipped with hand-held or portable fire extinguishers and with larger units for extinguishing fires? [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 28.1*]

Notes: Detailed information on the types of fire extinguishers and units and their purpose are described in Polish Standards (which are equivalent to European (EN) Standards), in accordance with the following types of fire: [*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 28.2*]

- A - Solid organic materials whose combustion is associated with the formation of charred wastes/residues;
- B - Liquids and materials that melt;
- C - Gases;
- D - Metals; and
- F - Grease/fats and cooking oils (Notes: no item “E” is included in original Polish text of the Ordinance).

13.34 Does the facility ensure that one fire extinguishing unit with a capacity of at least 2 kg (or 3 liters) is provided in the following areas: [The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 32.3]

- Each 100 square meters of fire zones in a building that does not have a permanent fire extinguishing system, including:
 - Areas classified as being within fire hazard areas ZL I, II, III and V;
 - Production or storage areas where the fire load density is over 500 MJ per square meter; and
 - Zones where there is an explosion hazard; and
- Each 300 square meters of area in zones not mentioned in the previous bullets, with the exception of those classified as ZL IV?

Notes: For fire safety requirements for liquid gas storage see *The Ordinance of the Minister of Economy of 21 November 2005 Regarding Technical Requirements to be Met by Liquid Fuel Stations and Bases, Far-reaching Transmission Pipelines Used for Transport of Crude Oil, Oil Products and Their Locations* (Dz. U. 2005, No. 243, item 2063), which is covered in Section 16.0 of this protocol. [The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 32.4]

13.35 Does the facility ensure that fire extinguishing and fighting equipment is placed as follows: [The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 29.1]

- In easily accessible and visible locations, especially by entrances and on staircases, in passages and corridors, and at building exits;
- In areas that are not exposed to mechanical damage or the action of heat (e.g., from furnaces or heaters); and
- In multi-floor buildings, in the same locations on each floor, if technically possible?

13.36 Does the facility ensure that fire extinguishing and fighting equipment is placed according to the following criteria: [The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 29.2]

- Equipment is not located more than 30 meters from the areas where it may be needed; and
- Access areas for equipment are at least 1 meter wide?

IX. Permanent Fire Extinguishing Devices

13.37 Does the facility include permanent fire extinguishing devices which have sufficient fire extinguishing materials (e.g., water and foam) and which are self-activating during the early stages of a fire, if it engages in the following types of operations: [The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Sections 23.1 and 23.2]

- Restaurants or other dining facilities with capacity of more than 600 people; and
- Trade and exhibition buildings with one-floor fire zone areas greater than 10,000 square meters and/or multiple-floor fire zone areas (assumed with each floor's area) greater than 8,000 square meters?

Notes: Other types of operations, such as high-rise buildings for public use, theaters, cinemas, sports arenas, apartment buildings, and State-operated centers, are also specified in the Ordinance; however, these items have not been included in this protocol since they do not have general application to an operating manufacturing facility. [The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 23.1 - 23.3]

In fire zones and areas equipped with permanent fire extinguishing devices that contain gas or other substances that might be harmful to human health, safety precautions must be taken in accordance with European Union Standards to protect people in those areas. [The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 23.3]

X. Signaling and Alarm Systems

13.38 Has the facility installed signaling devices and alarm systems that will automatically (i.e., without the need for human intervention) detect and transmit information in the event of a fire and that include a receiving display terminal for fire alarm systems and for damage alarm systems if its buildings or activities encompass any of the following operations: [[*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 24.1*](#)]

- Trade and exhibition buildings with one-floor fire zone areas greater than 5,000 square meters and/or multiple-floor fire zone areas (assumed with each floor's area) greater than 2,500 square meters;
- Restaurants or other dining facilities with a capacity of more than 300 people;
- Workplaces employing over 100 disabled persons per building;
- Underground garages where the fire zone exceeds 1,500 square meters; and
- Underground garages with more than one level?

Notes: Other types of operations, such as high-rise buildings for public use, underground train stations, banks for which the fire zone is greater than 500 square meters, theaters, cinemas, sports arenas, apartment buildings, and State-operated centers, are also specified in the Ordinance; however, these items have not been included in this protocol since they do not have general application to an operating manufacturing facility. [[*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 24.1 - 24.2*](#)]

If the facility is equipped with permanent fire extinguishing devices, it is not necessary to install a signaling and alarm system unless the fire extinguishing devices will not operate without the signaling and alarm system. [[*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 26.1 and 26.2*](#)]

This does not relieve the facility of the responsibility to install signaling and alarm devices that are connected to the nearest fire station, if required, as indicated in Question 13.3. [[*The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 26.3*](#)]

Methods for connecting the signal and alarm systems are determined by the owner, manager or tenant of the facility, in cooperation with the local Fire Chief. [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 27](#)]

- 13.39** Has the facility installed an audible alarm system that allows sound signals or announcements to be transmitted automatically after receiving notice from the alarm system described in Question [13.38](#) or from an operator if it has trade and exhibition buildings with one-floor fire zone areas greater than 10,000 square meters and/or multiple-floor fire zone areas (assumed with each floor's area) greater than 8,000 square meters? [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 25.1](#)]

Notes: Other types of operations, such as high-rise buildings for public use, theaters, cinemas, sports arenas, apartment buildings, and State-operated centers, are also specified in the Ordinance; however, these items have not been included in this protocol since they do not have general application to an operating manufacturing facility. [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 25.1](#)]

XI. Technical Systems and Devices

- 13.40** If the facility burns solid, liquid or gaseous fuel, does it ensure that the smoke ducts or chimneys are cleaned as follows: [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 30.1](#)]

- For ovens from restaurants or other dining facilities, at least once per month unless local regulations require otherwise;
- From other ovens burning solid fuel (other than those at restaurants or other dining facilities), at least four times per year; and
- From ovens burning liquid or gaseous fuel (other than those at restaurants or other dining facilities), at least twice per year?

Notes: The ventilation ducts in all facilities must be cleaned at least once per year unless their use necessitates additional cleaning. [[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 30.2](#)]

13.41 Does the facility ensure that the temperature of the external surfaces of devices that generate heat (except electro-energetic installations) and the temperature of air pumped into facility areas meet the following requirements: [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.1\]](#)

- The temperature of gases and liquid vapors does not exceed 2/3 of the maximum surface temperature in degrees Celsius;

Notes: This is determined by the Polish Standards pertaining to electric devices in potentially explosive atmospheres for specific temperature classes for gases and vapors. These Standards are not identified in the Ordinance.

- In the presence of dust and fibers, temperatures are:
 - At least 70 degrees Celsius below the smoldering temperature of a 10 mm layer of dust, for the horizontal heating surfaces or at a slope of 60 degrees from horizontal;
 - Less than 2/3 of the temperature in degrees Celsius of auto-ignition of a mixture of dust or fibers with air, for surfaces with a slope greater than 60 degrees from horizontal and for surfaces which are protected from the accumulation of dust and fibers; and
 - Less than 2/3 of the temperature in degrees Celsius of auto-ignition of a mixture of dust or fibers with air for fire-resistant dusts or fibers, independent of the slope of the surfaces of the heating devices; and
- In the presence of other remaining flammable solids, less than 2/3 of the auto-ignition temperature in degrees Celsius?

Notes: The permissible working temperatures for electro-energetic devices and the rules for the classification of gases and vapors are determined separately by specific regulations and Polish Standards. [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.2\]](#)

In determining permissible temperatures, the standard is as follows: [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.3\]](#)

- For flammable materials present in a given area, the lowest auto-ignition temperature of those materials present; and
- For smoldering dusts, the lowest smoldering temperature of those dusts present.

13.42 Does the facility ensure that it does not recycle air in heating and ventilation systems if this may cause an increase in the explosion hazard? [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.4\]](#)

13.43 If the facility uses central heating systems, does it ensure that they are equipped with automatic thermo-regulators that prevent excessive temperatures due to the blockage of airflow or blockage of operation of the heating device in the absence of flowing air? [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.5\]](#)

13.44 If the facility uses steam and water central heating systems, does it ensure that they are not used in spaces that contain materials that react with water or with steam to form flammable gases? [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.6\]](#)

13.45 Are the surfaces of heating ducts, and devices that are present in areas in which there are emissions of flammable dusts and fibers, smooth, easy to clean and resistant to the spread of fire? [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.7\]](#)

13.46 Does the facility ensure that equipment that may generate static electricity with a strong enough potential to ignite flammable materials is equipped with the appropriate means of protection? [\[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.8\]](#)

Notes: The appropriate means of protection must be in accordance with European Union Standards, which are not specified in the Ordinance.

Table 13-1**Required Distances between Buildings for Fire Safety**

Type of building and for PM buildings the maximum fire load density of the fire zone (Q) in MJ/m ²	Type of building and for PM buildings the maximum fire load density (Q) of the fire zone in MJ/m ² (Distance in meters)			
	ZL	PM		
		Q≤1000	1000<Q≤4000	Q>4000
ZL	8	8	15	20
PM Q≤1000	8	8	15	20
PM 1000<Q≤4000	15	15	15	20
PM Q>4000	20	20	20	20

Notes: Terms used in this table are defined as follows:

- “MJ/m²” is the abbreviation for mega joules per square meter;
- “PM” refers to production or manufacturing and storage buildings or parts thereof;
- “Q” refers to the maximum fire load density; and
- “ZL” refers to any of the types (i.e. ZL I – ZL V) of residential and public use buildings defined based on their hazard to people.

Source: The Ordinance of the Minister of Infrastructure of 12 April 2002 Regarding Technical Conditions for Buildings and their Locations, Section 271.1.

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is provided for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter format does not contain the electronic links and other functionality contained in the MS Word version. The following instructions pertain to the fully linked Word version of the AQC.

Each question from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, electronic links back to the original protocol document are provided for quick access to this information when needed. To return to where you were in the AQC after following a link, use the back arrow located on the Audit Quick Check Toolbar.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X’s to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

Additional audit questions can be added to the end of the AQC. Examples might include corporate requirements or best management practices. To add more questions, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Continue to sequentially number the questions by putting your cursor in the first column and typing the desired number.

Please Note: Additional rows will be included in the sort function. It is important that you number the questions for the sort functions to work. Please consider the following sort rules when entering custom text.

Sorting Responses

The AQC sort feature is accessed from the IAPC menu item located on the far right on the Main MS Toolbar. Please note the following criteria to take full advantage of this feature.

You can change the column titles as you see fit, but the menus assume that:

- the first column contains the question number and question text;
- the second column is "Not Applicable" (N/A) entries;
- the third column is "Complies" entries; and
- the fourth column is "Does Not Comply" entries.

A question is considered "Complies" if there is any text ("X" or "YES", for instance) in the "Complies" column.

A question is considered "Incomplete" if columns 2 to 4 are all empty.

Only one column should contain a value for any given question.

Click the IAPC menu item and then select one of the following menu choices:

Sort by Question Number

- Sorts the section by question number

Sort with Incomplete first

- Sorts the section with Incomplete first, Does Not Comply next, Complies next, then N/A

Sort with Non-compliant first

- Sorts the section with Does Not Comply first, Complies next, N/A next, then Incomplete

Sort with Compliant first

- Sort the section with Complies items first, Does Not Comply next, N/A next, then Incomplete

Sort with Not Applicable last

- Sort the section with not-applicable items last (Complies first, Does Not Comply next, Incomplete next, then N/A)

For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click the IAPC menu item and choose "Sort with Non-compliant first". Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

Once the completed AQC is sorted, save or print a copy of the results. The AQC can then be re-sorted using a different option.

SECTION 13.0 FIRE SAFETY**AUDIT QUICK CHECK**

SITE: _____ DATE: _____

ASSESSOR: _____

	Not Applicable	Complies	Does Not Comply
Q13.1 Does the facility ensure that work areas cannot be locked in a manner that prevents workers from exiting? [<i>The Ordinance of 26 September 1997 on General Work Health and Safety Regulations, Section 23</i>] See protocol for notes. I. Means of Egress Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.2 If the facility is responsible for fire protection at a building or facility or on a piece of land, does it comply with the following requirements: [<i>The Act of 24 August 1991 on Fire Protection, Article 4.1</i>] - Follows fire fighting technical construction, installation and technological requirements; - See protocol for notes. - Supplies the building, facility or land with fire fighting equipment and fire extinguishers, in accordance with local requirements; - Ensures that fire fighting equipment and fire extinguishers are maintained and repaired to ensure proper functioning; - Ensures the safety of people present in the building or facility or on the land, and provides for their evacuation in the event of emergencies; - Prepares buildings, facilities or land for rescue operations; - Informs workers about the fire regulations; and - Determines procedures to be employed in case of fire, natural disaster or other local hazard? - See protocol for notes. II. General Fire Protection Requirements Comments:			
Q13.3 If there are no local fire services in the facility or its buildings and the facility is required to have a fire alarm system, has it installed signaling and alarm devices that are connected to the nearest fire station? [<i>The Act of 24 August 1991 on Fire Protection, Chapter 2, Article 5.1</i>] See protocol for notes. II. General Fire Protection Requirements Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.4 Does the facility ensure that fire protection requirements are fulfilled by use of appropriate equipment, fire fighting and rescue devices, and fire extinguishers before it begins the use of a new, renovated or altered building, facility, piece of land, machine or device, or the use of new product? [<i>The Act of 24 August 1991 on Fire Protection, 6.5</i>] II. General Fire Protection Requirements Comments:			
Q13.5 Does the facility have a certificate from the Fire Department's (Ministry of Internal Affairs) National Research and Development Unit stating that its fire protection equipment is approved for use? [<i>The Act of 24 August 1991 on Fire Protection, Article 7.1 and 7.2</i>] See protocol for notes. II. General Fire Protection Requirements Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.6 Does the facility prohibit, on its premises and in adjacent areas, the use of open fire, smoking tobacco and other factors that may cause ignition of materials in the following areas: <i>[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1(1)]</i> – An explosive atmosphere, with the exception of equipment that is designed for that purpose; and See protocol for notes. – Locations containing flammable hazardous materials posing a fire hazard? II. General Fire Protection Requirements Comments:			
Q13.7 Does the facility, on its premises and in adjacent areas, prohibit the following activities which can cause or enhance the spread of a fire or hamper rescue operations: <i>[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1(2)- 4.1(6)]</i> – Using installations, equipment and tools that malfunction, not using them in accordance with their intended purpose, or not using them in accordance with the manufacturer's instructions and without periodic inspection, if these actions may cause fire or spread fire; – Garaging automotive vehicles in facilities and locations that are not designed for this purpose without first emptying the tanks of fuel and disconnecting the vehicles' batteries; – Heating tar and other materials by means of an open fire at a distance of less than 5 meters from the facility, adjacent storage sites, or storage areas containing flammable materials; See protocol for notes. – Starting bonfires, disposing of hot ashes, or burning garbage in locations that may ignite adjacent facilities or flammable materials; and See protocol for notes.			

	Not Applicable	Complies	Does Not Comply
– Storing of flammable materials, including plant waste and branches, at a distance of less than 4 meters from the border of the building lot? II. General Fire Protection Requirements Comments:			
Q13.8 Does the facility, on its premises and in adjacent areas, prohibit the storage of flammable materials at a distance less than 0.5 meters from the following equipment: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1(8)</i>] – Devices and installations whose surfaces can become hotter than 100 degrees C; – Cable lines with voltages higher than 1 kV; and – Grounding lines, active transformers, electric power lines, switchgear, and electrical sockets with a voltage above 400 V? II. General Fire Protection Requirements Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.9 Does the facility, on its premises and in adjacent areas, prohibit the following activities involving electrical equipment: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1(7), (9) and (10)</i>] – Use of electrical heating devices placed directly on flammable surfaces, except when those devices are used according to the manufacturer's instructions; – Use of lighting shields made of flammable materials, with the exception of materials that are difficult to ignite, unless they are separated from bulbs by a distance of at least 0.05 meters; and – Installation of lighting covers or other electrical equipment such as circuit breakers, switches and electrical outlets directly on flammable surfaces, unless their construction ensures protection against ignition? II. General Fire Protection Requirements Comments:			
Q13.10 Does the facility, on its premises and in adjacent areas, prohibit the following activities related to evacuation of the premises and access to emergency equipment: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1(11) through (16)</i>] – Storage of flammable materials along emergency evacuation routes, or placement of objects in those evacuation routes in a way that would decrease the height or width of the routes below the required dimensions; See protocol for notes. – Storage of flammable materials or containers for combustible gas (regardless of their fill-level) in attics, general use passages or basements; – Closing emergency exit doors during an emergency or fire; – Locking of doors or fire doors to prevent their automatic closure in the event of a fire;			

	Not Applicable	Complies	Does Not Comply
– Installing interior design elements, installations and equipment in a manner that reduces the dimensions of the escape route below the value required by the <i>Regulations on Technical Building Conditions</i>; – Use as an evacuation route of a theater or other hall in which there is simultaneous traffic of people to and from the waiting area/rooms; and – Prevention or obstruction of access to the following items: – Fire extinguishers and fire suppression equipment, – Anti-explosive devices; – Sources of water to be used for fire extinguishing; – Devices that start or control extinguisher equipment and other installations that affect the fire prevention capabilities of the facility; – Emergency exits or windows for the fire fighting crew; – Circuit breakers, electrical control panels, and main gas valves; and – External screens or shutters which open outwards? II. General Fire Protection Requirements Comments:			
Q13.11 Does the facility prohibit the filling of liquid gas cylinders at fuel stations, liquid gas stations, and other locations not designed for that purpose? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1(19)</i>] II. General Fire Protection Requirements Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.12 Does the facility prohibit the distribution and transport of petroleum products in locations not designed for that purpose? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.1(20)</i>] II. General Fire Protection Requirements Comments:			
Q13.13 Does the facility ensure that the following requirements are met in buildings and in open storage places: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.2</i>] – Fire fighting equipment is maintained in working condition; – Buildings are equipped with fire emergency electrical shut-off switches; – Telephone numbers and instructions for emergency response actions are posted in visible places in case of fire; and – Signs are posted to indicate the locations of the following: – Evacuation routes and exits and areas where, according to the <i>Regulations on Technical Building Conditions</i>, two exits are required; See protocol for notes. – Fire prevention devices; – Control systems for fire prevention devices; – Fire emergency electrical shut-off switches, gas main valves, and areas of flammable materials; – Areas containing materials associated with fire hazards; – Evacuation ladders and slides (rescue sleeves); – Containers with escape masks/respirators; – Evacuation meeting gathering points;			

	Not Applicable	Complies	Does Not Comply
– Keys for emergency exits; – Hoists for rescue crews; – Fire protection water reserves; – Fire doors and routes; and – Any other areas that are classified as hazardous? See protocol for notes. II. General Fire Protection Requirements Comments:			
Q13.14 Does the facility ensure that a safety zone at least 2 meters wide with a surface made of fire resistant materials or clean fill is maintained around storage sites that may pose a fire hazard? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.3</i>] II. General Fire Protection Requirements Comments:			
Q13.15 Does the facility ensure that fire roads and fire lanes are maintained to allow use by fire department? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 5</i>] See protocol for notes. II. General Fire Protection Requirements Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.16 Does the facility ensure that individuals who notice a fire, natural disaster or other local hazard immediately report such events to the following: [<i>The Act of 24 August 1991 on Fire Protection, Article 9</i>] – Persons who are present in the danger zone; and – Fire and police stations; or – The Sub-prefect and the head of the village? III. Notification Requirements Comments:			
Q13.17 If the facility stores flammable materials against its walls, does it meet the following conditions: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.4</i>] – The materials are not flammable hazardous materials (defined in the introductory notes to this section); – The storage area does not exceed the fire zone established for the facility; – Access to the facility is secured in the event an emergency; – A minimum safe distance from other facilities is maintained; and – A minimum of 5 meters is maintained from a fire route? IV. Storage of Flammable Materials Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.18 If the facility has a production or warehouse facility where combustible dust may settle on surfaces, does it ensure that regular cleaning is conducted? <i>[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 4.6]</i> See protocol for notes. IV. Storage of Flammable Materials Comments:			
Q13.19 Does the facility take the following steps to provide proper fire protection means for evacuation: <i>[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 15.1]</i> – Secures the proper number and width of the exits; – Uses evacuation paths of permissible length, width, and height; See protocol for notes. – Secures safe evacuation passages that have proper materials and structure against fire; – Secures evacuation passages protected against smoke, including by the use of devices or equipment and/or other technical measures and installations to ensure the removal of smoke; – Provides emergency lighting; and – Ensures that there are audible emergency warning signals and voice announcements in buildings for which it is a requirement? See protocol for notes. V. Evacuation Requirements Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.20 Does the facility evaluate the conditions of its buildings to ensure that they meet the safety criteria to enable evacuation in the event of a fire and does it remedy any life-threatening conditions identified in the list noted below? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 16.3</i>] See protocol for notes. V. Evacuation Requirements Comments:			
Q13.21 Does the facility conduct a test of the operation of the fire evacuation system at least every two years if it meets the following criteria: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 17.1</i>] – Has a fire safety zone that is not classified as a ZL IV (defined at the beginning of this protocol section); and – Is designated for more than 50 people who are permanent users of the building? V. Evacuation Requirements Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.22 Does the facility notify the head of the fire department concerning the scheduled test described in Question 13.21 at least one week prior to the test date? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 17.4</i>] V. Evacuation Requirements Comments:			
Q13.23 Does the facility ensure that that Hydrant 25 equipment is installed appropriately for the ZL category of the building, as follows: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 19.1, 1), 2)</i>] – On each floor of high-rise buildings except buildings that are exclusively ZL IV; and – On each floor of a low- and medium-height building, other than temporary buildings, as follows: – Categories ZL I, II and V buildings, with a surface area of more than 200 square meters; – Category ZL III in medium-height buildings exceeding 200 square meters; – Category ZL III medium-height buildings, where the ZL III only applies to the ground floor and the higher floors are exclusively ZL IV, with an surface area exceeding 1,000 square meters; and – Low-height building with a surface area exceeding 1,000 square meters? See protocol for notes. VI. Fire Protection/Water Supply Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.24 If the facility has a single level garage with more than 10 parking spaces or a multi level garage, is it equipped with a Hydrant 33? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 19.2</i>] VI. Fire Protection/Water Supply Comments:			
Q13.25 Does the facility ensure that Hydrant 52 equipment is installed in the following locations: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 19.3</i>] – Production or storage fire zones with a fire load density exceeding 500 MJ/m² and areas exceeding 200 square meters; – Production or storage fire zones with a fire load density not exceeding 500 MJ/m² in which there are areas exceeding 100 square meters with a fire load density exceeding 1,000 MJ/m²; and – Near the entrances to storage areas or technical areas exceeding 200 square meters with a fire load density exceeding 500 MJ/m² and located in one of the following fire zones: ZL I, II, III, and V, which are in a low- or medium-height buildings? See protocol for notes. VI. Fire Protection/Water Supply Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.26 Does the facility ensure that Valve 52 and Hydrant 52s are available along corridors and, in particular, in the following locations: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 20.1</i>] – At the entrances to buildings and stairwells on each floor of the building; – In the aisles and corridors, including the lobbies and corridors of each floor in high rise buildings; – At the entrances to the attic areas; and – At the exits to open spaces or exits from production and storage facilities, in particular where there is a risk of explosion? VI. Fire Protection/Water Supply Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.27 Does the facility ensure that the reach of any Hydrant 25 and/or Hydrant 52 equipment encompasses the entire surface of the protected building, fire zone or area, and specifically includes the following: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Sections 18. 2 and 20.3</i>] – The length of the height of the internal hydrant hose is compliant with the corresponding requirements set forth in the Polish and EU standards (no further details are provided in the Ordinance); and – The effective range of the fire extinguishing streams are as follows: – 3 meters for conically dispersed streams in fire zones classified as hazard ZL and located in buildings with more than one storey; and – 10 meters in any buildings other than those specified in the preceding sub-bullet? See protocol for notes. VI. Fire Protection/Water Supply Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.28 If the facility has a fire zone (e.g., ZL I, defined in the introductory notes to this section) that is greater than 1,000 m², has it evaluated its fire fighting infrastructure to ensure it meets with the requirements of <i>The Ordinance of the Minister of Internal Affairs and Administration of 24 July 2009 on Fire Safety Water Supply and Fire Roads</i>, and in particular, with regard to the following: [<i>The Ordinance of the Minister of Internal Affairs and Administration of 24 July 2009 on Fire Safety Water Supply and Fire Roads, Chapters 2-7</i>] – The supply of fire water available; – The fire water piping and pumping system; and – Fire roads? See protocol for notes. VI. Fire Protection/Water Supply Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.29 Does the facility take the following actions before beginning work that may involve a fire or explosion hazard: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 36.1</i>] – Evaluates the fire hazard where the work will be performed; – Determines the actions necessary to prevent fire and explosions from occurring or spreading; – Designates people responsible for appropriate preparation of the work area and for securing the area once the work is complete; – Ensures that the work is performed by people who are authorized and qualified; and – Informs the workers of existing fire hazards in the area and concerning the actions required to prevent fire or explosion? VII. Fire and Explosion Hazards Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.30 Does the facility ensure it observes the following safety measures when conducting work that may involve a fire or explosion hazard: <i>[The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 36.2]</i> – Protects against ignition of combustible materials present in the workplace and in adjacent areas, including the structural elements and technical installations found within its buildings; – Ensures that the concentration of vapors or gases in a mixture with air where hazardous work (with regard to its fire or explosion potential) is conducted does not exceed 10% of the lower explosion limit; – Ensures the concentration of vapors or gases in a mixture with air where work relating to the use of flammable liquids or flammable gases previously performed conducted does not exceed 10% of the lower explosion limit; – Installs equipment that eliminates all fire sources; – Inspects the place where the work was performed and adjacent areas after completion of the work; and – Uses only properly functioning equipment and fire-safe equipment? VII. Fire and Explosion Hazards Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.31 If processes are conducted with materials that can produce an explosive mixture, or in which such materials are stored, does the evaluation in Question 13.29 include the identification and designation of explosion hazard zones, and the identification of factors that may initiate a spark in them? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 37.1</i>] See protocol for notes. VII. Fire and Explosion Hazards Comments:			
Q13.32 Does the facility ensure that it designates the explosion hazard zone in a given space if the space contains an explosive mixture occupying at least 0.01 cubic meters of the area? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 33.7</i>] See protocol for notes. VII. Fire and Explosion Hazards Comments:			
Q13.33 Does the facility ensure that areas and buildings are equipped with hand-held or portable fire extinguishers and with larger units for extinguishing fires? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 28.1</i>] See protocol for notes. VIII. Fire Extinguishers/Fire Fighting Equipment Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.34 Does the facility ensure that one fire extinguishing unit with a capacity of at least 2 kg (or 3 liters) is provided in the following areas: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 32.3</i>] – Each 100 square meters of fire zones in a building that does not have a permanent fire extinguishing system, including: – Areas classified as being within fire hazard areas ZL I, II, III and V; – Production or storage areas where the fire load density is over 500 MJ per square meter; and – Zones where there is an explosion hazard; and – Each 300 square meters of area in zones not mentioned in the previous bullets, with the exception of those classified as ZL IV? See protocol for notes. VIII. Fire Extinguishers/Fire Fighting Equipment Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.35 Does the facility ensure that fire extinguishing and fighting equipment is placed as follows: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 29.1</i>] – In easily accessible and visible locations, especially by entrances and on staircases, in passages and corridors, and at building exits; – In areas that are not exposed to mechanical damage or the action of heat (e.g., from furnaces or heaters); and – In multi-floor buildings, in the same locations on each floor, if technically possible? VIII. Fire Extinguishers/Fire Fighting Equipment Comments:			
Q13.36 Does the facility ensure that fire extinguishing and fighting equipment is placed according to the following criteria: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 29.2</i>] – Equipment is not located more than 30 meters from the areas where it may be needed; and – Access areas for equipment are at least 1 meter wide? VIII. Fire Extinguishers/Fire Fighting Equipment Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.37 Does the facility include permanent fire extinguishing devices which have sufficient fire extinguishing materials (e.g., water and foam) and which are self-activating during the early stages of a fire, if it engages in the following types of operations: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Sections 23.1 and 23.2</i>] – Restaurants or other dining facilities with capacity of more than 600 people; and – Trade and exhibition buildings with one-floor fire zone areas greater than 10,000 square meters and/or multiple-floor fire zone areas (assumed with each floor's area) greater than 8,000 square meters? See protocol for notes. IX. Permanent Fire Extinguishing Devices Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.38 Has the facility installed signaling devices and alarm systems that will automatically (i.e., without the need for human intervention) detect and transmit information in the event of a fire and that include a receiving display terminal for fire alarm systems and for damage alarm systems if its buildings or activities encompass any of the following operations: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 24.1</i>] – Trade and exhibition buildings with one-floor fire zone areas greater than 5,000 square meters and/or multiple-floor fire zone areas (assumed with each floor's area) greater than 2,500 square meters; – Restaurants or other dining facilities with a capacity of more than 300 people; – Workplaces employing over 100 disabled persons per building; – Underground garages where the fire zone exceeds 1,500 square meters; and – Underground garages with more than one level? See protocol for notes. X. Signaling and Alarm Systems Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.39 Has the facility installed an audible alarm system that allows sound signals or announcements to be transmitted automatically after receiving notice from the alarm system described in Question 13.38 or from an operator if it has trade and exhibition buildings with one-floor fire zone areas greater than 10,000 square meters and/or multiple-floor fire zone areas (assumed with each floor's area) greater than 8,000 square meters? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 25.1</i>] See protocol for notes. X. Signaling and Alarm Systems Comments:			
Q13.40 If the facility burns solid, liquid or gaseous fuel, does it ensure that the smoke ducts or chimneys are cleaned as follows: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 30.1</i>] – For ovens from restaurants or other dining facilities, at least once per month unless local regulations require otherwise; – From other ovens burning solid fuel (other than those at restaurants or other dining facilities), at least four times per year; and – From ovens burning liquid or gaseous fuel (other than those at restaurants or other dining facilities), at least twice per year? See protocol for notes. XI. Technical Systems and Devices Comments:			

	Not Applicable	Complies	Does Not Comply
Q13.41 Does the facility ensure that the temperature of the external surfaces of devices that generate heat (except electro-energetic installations) and the temperature of air pumped into facility areas meet the following requirements: [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.1</i>] – The temperature of gases and liquid vapors does not exceed 2/3 of the maximum surface temperature in degrees Celsius; See protocol for notes. – In the presence of dust and fibers, temperatures are: – At least 70 degrees Celsius below the smoldering temperature of a 10 mm layer of dust, for the horizontal heating surfaces or at a slope of 60 degrees from horizontal; – Less than 2/3 of the temperature in degrees Celsius of auto-ignition of a mixture of dust or fibers with air, for surfaces with a slope greater than 60 degrees from horizontal and for surfaces which are protected from the accumulation of dust and fibers; and – Less than 2/3 of the temperature in degrees Celsius of auto-ignition of a mixture of dust or fibers with air for fire-resistant dusts or fibers, independent of the slope of the surfaces of the heating devices; and – In the presence of other remaining flammable solids, less than 2/3 of the auto-ignition temperature in degrees Celsius? See protocol for notes. XI. Technical Systems and Devices Comments:			

		Not Applicable	Complies	Does Not Comply
Q13.42 Does the facility ensure that it does not recycle air in heating and ventilation systems if this may cause an increase in the explosion hazard? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.4</i>] XI. Technical Systems and Devices Comments:				
Q13.43 If the facility uses central heating systems, does it ensure that they are equipped with automatic thermo-regulators that prevent excessive temperatures due to the blockage of airflow or blockage of operation of the heating device in the absence of flowing air? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.5</i>] XI. Technical Systems and Devices Comments:				
Q13.44 If the facility uses steam and water central heating systems, does it ensure that they are not used in spaces that contain materials that react with water or with steam to form flammable gases? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.6</i>] XI. Technical Systems and Devices Comments:				

	Not Applicable	Complies	Does Not Comply
Q13.45 Are the surfaces of heating ducts, and devices that are present in areas in which there are emissions of flammable dusts and fibers, smooth, easy to clean and resistant to the spread of fire? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.7</i>] XI. Technical Systems and Devices Comments:			
Q13.46 Does the facility ensure that equipment that may generate static electricity with a strong enough potential to ignite flammable materials is equipped with the appropriate means of protection? [<i>The Ordinance of the Minister of the Internal Affairs and Administration of 7 June 2010 on Fire Protection for Buildings, Other Building Structures and Surrounding Areas, Section 31.8</i>] See protocol for notes. XI. Technical Systems and Devices Comments:			

14.0 TRANSPORT OF DANGEROUS GOODS

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

- Labels and Placards 14-5
- Transport Preparation and Vehicles 14-5
- Requirements for the Transport of Specific Classes and Divisions of Dangerous Goods.....14-10
- Transport Documentation Requirements.....14-16

Tables or Appendices referenced in the protocol are located at the end of this section, along with our audit scorecard, entitled Audit Quick Check. This protocol applies to facilities located throughout Argentina. Where applicable, additional information is supplied relative to facilities specifically located in the Province of Buenos Aires.

The Spanish text of Argentinean national legislation and some Province of Buenos Aires legislation can be accessed through one of the following methods:

- Searching the legislation catalogue by legislation number, type of legislation and/or year at the Ministry of Economy and Public Finances website, <http://infoleg.mecon.gov.ar/infolegInternet/mostrarBusquedaNormas.do> (last accessed in June 2009); or
- Applying for a free subscription to Estrucplan Online and searching the legislation catalogue by legislation number, type of legislation and/or year at: <http://www.estrucplan.com.ar/Secciones/Login/Login.asp?Salir=1&Seccion=Buscador%20de%20Legislaci%F3n> (last accessed in June 2009).

The Spanish text of Buenos Aires legislation can be accessed through one of the following methods:

- Searching the legislation catalogue by legislation number or keyword at the Central Department of Argentine Ministries website, <http://www.gob.gba.gov.ar/dijl/buscador.php?id=3> (last accessed in June 2009); or
- Searching the catalogue by legislation number, type of legislation and/or year or under the categories in “Bases de Datos” and “Marco Regulatorio” at the Provincial Ministry for Sustainable Development website, <http://www.opds.gba.gov.ar/index.php/buscador/avanzada> (last accessed in June 2009).

Key legislation and regulations covered in this protocol are noted as follows:

National

- **Resolution No. 720 of November 19, 1987** (Resolución Núm. 720 del 29 de febrero de 1988). This Resolution establishes additional requirements for the transport of dangerous goods, including labeling, placarding, segregation and management procedures.
- **Resolution No. 157 of April 14, 1993** (Resolución Núm. 157 del 14 de abril de 1993). This Resolution requires drivers of transport vehicles to obtain a driver's license specifically for the transport of dangerous goods.
- **Decree No. 831 of April 23, 1993** (Decreto Núm. 831 del 23 de abril de 1993). This Decree implements *Law No. 24,051 of December 17, 1991* and *Law No. 23,922 of April 15, 1991* and establishes requirements for hazardous waste generators, transporters, treatment facilities, and disposal facilities.
- **Decree No. 779 of November 20, 1995** (Decreto Núm. 779 del 20 de noviembre de 1995). This Decree establishes requirements for the transport of dangerous goods, including labeling, placarding, paperwork and training.
- **Resolution No. 195 of July 29, 1997** (Resolución Núm. 195 del 29 de julio de 1997). This Resolution replaces *Resolution 223/96*, and establishes requirements for the transport of dangerous goods, including classification and labeling of dangerous goods, as well as placarding requirements and requirements for incompatible goods.
- **Resolution No. 110 of December 11, 1997** (Resolución Núm. 110 del 11 de diciembre de 1997). This Resolution establishes the basic training program for drivers involved in the transport of dangerous goods and establishes a registry of companies offering services for the transport of dangerous goods.

- **Resolution No. 65 of June 30, 2000** (Resolución Núm. 65 del 30 de junio de 2000). This Resolution requires drivers who transport hazardous materials to complete an accredited course prior to the renewal of their driver's license. It also makes completion of an accredited course a prerequisite to licensure for new drivers.
- **Resolution No. 75 of July 26, 2002** (Resolución Núm. 75 del 26 de julio de 2002). This Resolution modifies *Resolution No. 195/97* by removing petroleum oil from the list of dangerous goods.
- **Resolution No. 905 of November 13, 2006** (Resolución Núm. 905 del 13 noviembre de 2006). This Resolution approves technical rules for the inspection of tankers with a capacity of more than three cubic meters for the transport of dangerous goods and hazardous wastes. It also creates the National Registry of Tank Inspection Operators for the inspection of those tankers.
- **Resolution No. 342 of May 14, 2007** (Resolución Núm. 342 del 14 mayo de 2007). This Resolution establishes a control system for persons and legal entities registered in the National Register for Precursor Chemicals that transport controlled chemical substances with non-registered third parties.

Province of Buenos Aires

There is no specific legislation in the Province of Buenos Aires regarding the transport of dangerous goods.

This protocol section updates information contained in the prior version (2007). Specific additions, deletions, and other changes made relative to this earlier version of the protocol are summarized in Appendix 14-A.

Transport of Dangerous Goods

Notes: Dangerous goods are classified and defined as follows: [Resolution No. 195/97, Annex I, Section 1]

- Class 1 - Explosives;
- Class 2 - Gases, with the following subdivisions:
 - Division 2.1 - Flammable gases;
 - Division 2.2 - Non-flammable, non-toxic gases; and
 - Division 2.3 - Toxic gases;
- Class 3 - Flammable liquids;
- Class 4 - This class is divided into the following divisions:
 - Division 4.1 - Flammable solids;
 - Division 4.2 - Substances prone to spontaneous combustion; and
 - Division 4.3 - Substances that release flammable gases upon contact with water;
- Class 5 - Oxidizing substances and organic peroxides, with the following divisions:
 - Division 5.1 - Oxidizing substances; and
 - Division 5.2 - Organic peroxides;
- Class 6 - Toxic (poisonous) substances and infectious substances, with the following divisions:
 - Division 6.1 - Toxic (poisonous) substances; and
 - Division 6.2 - Infectious substances;
- Class 7 - Radioactive materials;
- Class 8 - Corrosive materials; and
- Class 9 - Other dangerous substances.

Dangerous goods are further classified in accordance with the UN classification system, which is detailed in Chapters III - V. of, Annex I, Resolution No. 195/97.

Packaging for dangerous goods in Classes 3, 4, 5, 6.1 and 8 are classified into the following three groups, in accordance with the level of risk they present: [Resolution No. 195/97, Section 1.2 of Annex I]

- Packaging Group I - high risk;
- Packaging Group II - medium risk; and
- Packaging Group III - low risk.

The full text of Resolution No. 195/97 and its annexes can be accessed at Estrucplan Online.

Activities involving the transport of hazardous waste (see Section 4.0 of this protocol) must also comply with the requirements in this protocol section. [Decree No. 831/93, Section 28]

Labels and Placards

National

14.1 If dangerous goods are transported or consigned off site, have they been identified and classified in accordance with the listing described in the notes at beginning of this protocol section, and are they labeled, handled and shipped in accordance with that classification? *[Resolution No. 195/97, Sections 4.3 and 4.4 of Annex I]*

14.2 If dangerous goods are sent off site, do the containers and vehicles display the appropriate transport labels and placards? *[Resolution No. 195/97, Article, Section 7.4 of Annex I] and [Decree No. 779/95, Annex S, Article 45(d)]*

Notes: Section 7.4 of Annex I of Resolution No. 195/97 provides color images of the placards used to indicate the principal risk of dangerous goods. The full text of Resolution No. 195/197 and its annexes can be accessed at Estrucplan Online.

14.3 Do the transportation labels and placards have the following characteristics: *[Resolution No. 195/97, Sections 7.1 through 7.4]*

- Diamond-shaped;
- Indelible characters;
- Weather resistant when affixed to vehicles;
- Label size of at least 100 mm by 100 mm on containers; and
- Placard size of at least 250 mm by 250 mm when affixed to vehicles or trailers?

14.4 Are transport labels and placards positioned so they are visible? *[Resolution No. 195/97, Sections 7.1 through 7.4]*

Transport Preparation and Vehicles

14.5 Does the facility ensure that dangerous goods are transferred to the transporter with the containers packed and conditioned according to the manufacturer's instructions and in accordance with the packaging groups and container types set forth in Chapter VIII (containers) and IX (intermediate bulk containers) of Annex I of *Resolution No. 195/97?* *[Decree No. 779/95, Annex S, Article 45(c)]; [Resolution No. 720/87, Annexes D1 and D2] and [Resolution No. 195/97, Chapters VIII and IX]*

Notes: Although beyond the scope of this protocol, Chapter VIII (containers) and Chapter IX (intermediate bulk containers) of Annex I of Resolution No. 195/97 include requirements associated with containers used in the transport of dangerous goods, including types of containers required for specific classes of divisions of dangerous goods, maximum capacity for specific types of containers, special requirements for specific types of containers, required testing for specific types of containers, and identification markings for specific types of containers.

The full text of Resolution No. 195/197 and its annexes is available at Estrucplan Online.

- 14.6** If the facility transports dangerous goods in the same vehicle and/or container with other incompatible goods, does it meet the requirements of Table 14-1? *[Resolution No. 720/87, Annex B]*
- 14.7** Prior to placing dangerous goods into a bulk transport vehicle, does the facility verify that the transporter has an affidavit that states the following: *[Decree No. 779/95, Annex S, Article 45(g)]*
- What product was last shipped in the transporter's bulk container; and
 - What decontamination practices were used after the last shipment?
- 14.8** Does the facility ensure that any unit of transport that is loaded with dangerous goods at the facility meets the following requirements: *[Resolution No. 195/97, Annex I, Section 2.1.1]*
- It is equipped with portable fire extinguishers with sufficient capacity to extinguish the following types of fires:
 - Of the motor or any other part of the unit of transport; or
 - Of the load (in cases where conformance with the preceding bullet is not possible);
 - It is equipped with a set of tools that is adequate for emergency repairs during travel; and
 - It is equipped with a minimum of two chocks that are capable of holding the vehicle in place and that are compatible with the load in the vehicle?

Notes: Portable fire extinguishers and fire safety requirements are further addressed in Section 13.0 of this protocol.

14.9 If the facility transports any dangerous goods, does it comply with the following requirements: *[Resolution No. 195/97, Annex I, Section 2.1.2 through 2.1.4]*

- Cistern or tanker trucks used in the transport of dangerous goods, as well as all the fixtures/equipment that come into contact with the product (e.g., pumps, valves and lubricants used) are not damaged/corroded by the substance contained, and do not form any harmful or dangerous combinations with the substance;
- If, after the discharge of a vehicle or container that has received a load of dangerous goods, it is demonstrated that a spill of the contents occurred, the vehicle is cleaned and decontaminated immediately and prior to any subsequent loading of any substance;
- Prior to being loaded again, vehicles or containers previously loaded with dangerous goods in bulk are cleaned and decontaminated, unless if the contact between the previous and intended substances will not pose any additional risk;
- Unloaded vehicles or containers that still pose the same risks and hazards as when loaded are treated as if they were loaded; and
- Vehicles that are contaminated on the external surfaces are prohibited from circulating ever again or until they are decontaminated?

14.10 If the facility transports any dangerous goods, does it comply with the following requirements: *[Resolution No. 195/97, Annex I, Section 2.2]*

- Each load is stabilized and stacked in the vehicle and supported by appropriate means in a manner that avoids any displacement of any part of the load or collisions/impacts with another part of the load or with the walls of the vehicle;
- If the load consists of different categories of dangerous goods that are compatible with one another (see Table 14-1), these containers are stowed separately from the other non-dangerous goods so that access to is the dangerous goods possible in the case of an emergency;
- It is prohibited to load any container of dangerous goods on top of any fragile package, and any easily/highly flammable materials shall not be used in the stowing or stacking of these fragile packages;
- Smoking is prohibited during the handling of dangerous goods, in the proximity of either the packages or the vehicles, or inside the vehicles; and

- Entering vehicles with illumination equipment or flames, with equipment or devices capable of causing the ignition of products or their gases or vapors, is prohibited?

14.11 If the facility transports any dangerous goods, does it comply with the following requirements: *[Resolution No. 195/97, Annex I, Sections 2.2.3 through 2.2.7]*

- With the exception of cases where the use of a motor is necessary for the operation of pumps or other mechanisms that enable loading or unloading, the vehicle motor is turned off during the entire loading operation;
- Packages that are composed of materials that are sensitive to humidity are transported in covered vehicles or are themselves covered with a tarp/cover;
- Loading incompatible dangerous goods, or including non-dangerous goods within the same vehicle when the possibility of either direct or indirect risk to persons, property or the environment exists is prohibited;
- Goods that easily polymerize are only transported if measures are in place to prevent polymerization during transport;
- Vehicles and equipment that have been used to transport goods or merchandise capable of contaminating them are inspected after unloading to guarantee that there are no off-loading wastes; and
- If the above inspection indicates there is contamination, the vehicles and/or equipment are carefully cleaned and decontaminated in compliance with the applicable requirements (e.g., for hazardous and solid wastes, see Section 4.0 of this protocol)?

14.12 Does the facility ensure that, in any passenger vehicles, only dangerous goods for personal use (e.g., medical or toiletries) are allowed, and these are only allowed in quantities not exceeding 1 kilogram or 1 liter per passenger, as long as no quantities of Class 1 (explosive) or Class 7 (radioactive) dangerous goods are transported? *[Resolution No. 195/97, Annex I, Section 2.3]*

14.13 When dispatching dangerous goods in bulk, does the facility verify that vehicles used for these purposes are manufactured in compliance with international safety standards as certified by the National Committee for Transit Safety? *[Decree No. 779/95, Annex S, Article 9.1]*

Notes: "Bulk" refers to shipments that are not divided into parts or packaged in separate units. Bulk shipments include both tanker truck and trailer truck shipments. [Decree No. 779/95, Annex S, Section I]

14.14 If the facility transports any goods or dangerous goods on public roads in any cistern tanks, cistern containers and/or iso-containers ("iso-contenedores") with a capacity of over three cubic meters, have they been inspected according to the table in the note below this question and the following schedule: *[Resolution No. 905/06, Articles 1 and 3 and Annex I]*

- For equipment older than 10 years, the initial inspections indicated in the table below were completed within 3 months of the promulgation of *Resolution No. 905/06* on November 13, 2006; and
- For equipment less than 10 years old, the initial inspections were completed within 6 months of the promulgation of *Resolution No. 905/06* on November 13, 2006?

Notes: Resolution No. 905/06 establishes the technical standards for the inspections of the tanks and containers described in this question and the requirement that inspectors and inspection locations be qualified and registered. The registration of inspectors was required by December 3, 2006 (20 days from the publication date of the Resolution). Though no specific date is indicated in the legislation for the start date of the initial tank inspection, consultation with an official at the Secretariat of Transport confirmed that the promulgation of Resolution No. 905/06 was the starting date for the 3- or 6-month time limit set forth for initial inspection of tanks, depending on their age. Any new cistern tanks introduced into service since the Resolution's promulgation in 2006 have 3 or 6 months from their installation (as described in this question) to comply with the table below. [Resolution No. 905/06, Article 2-5 and Annex I, IV]

Inspection Item	Age	Frequency
<i>External visual</i>	<i>Any age</i>	<i>Annually</i>
<i>Internal visual</i>	<i>Any age</i>	<i>Annually</i>
<i>Tightness</i>	<i>1-10 yrs</i>	<i>2 years</i>
<i>Thickness</i>	<i>1-10 yrs</i>	<i>2 years</i>
<i>Source: Resolution No. 905/06, Annex I, III.</i>		

Requirements for the Transport of Specific Classes and Divisions of Dangerous Goods

Notes: Classes and divisions of dangerous goods are defined in the note at the beginning of this protocol section.

14.15 If Class 1 (explosive) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: *[Resolution No. 195/97, Annex I, Section 3.1, A]*

- Prior to loading these goods, the vehicle is inspected to ensure that there are no structural defects or deterioration of any of the structural components;
- Explosive substances are transported in closed box vehicles, or are covered with a cover/tarp that is impermeable and resistant to fire, and affixed in a manner that does not run the risk of becoming loosened; and
- Fireworks classified as 1.1.G, 1.2.G or 1.3.G and dangerous goods classified as 1.1.C, 1.1.D, 1.1.G, 1.3.C and 1.3.G, that can release dust, are not transported in containers with metallic floors or covering/lining?

14.16 If any Class 1 (explosive) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: *[Resolution No. 195/97, Annex I, Section 3.1, B]*

- Highly flammable materials are not used for stabilizing and stacking (stowing) the goods;
- The materials used to stow the goods prevent the goods from slipping or falling, and protect the goods from any friction or collision/impacts; and
- The goods are stowed in a manner that allows unloading of the goods one-by-one and without having to re-pack or shuffle the load at the final destination?

14.17 If Class 2 (flammable, non-toxic, or toxic gases) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: *[Resolution No. 195/97, Annex I, Section 3.2, A]*

- The electrical equipment of vehicles transporting any flammable gases is protected in a manner that prevents the generation of sparks; and

- Closed box vehicles used to transport containers of liquefied compressed or chemically unstable gases are equipped with adequate ventilation capabilities?

14.18 If Class 2 (flammable, non-toxic, or toxic gases) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: *[Resolution No. 195/97, Annex I, Section 3.2, B]*

- For the transport of gases which present a risk of poisoning, the vehicle personnel are provided with masks/respirators that are appropriate for the gases being transported;
- Entry with illumination devices or flames into a closed vehicle that is loaded with flammable gases is prohibited, and no apparatus or equipment that can cause ignition of substances are used;
- During loading, unloading or transfer operations, the containers or packages are not exposed to heat, dragged or subjected to collisions or shock; and
- Containers are not stowed in vehicles in a manner in which they can become displaced, fall or flip over?

14.19 If Class 3 (flammable liquids) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: *[Resolution No. 195/97, Annex I, Section 3.3, A]*

- Tanker trucks and container tankers that previously contained Class 3 dangerous goods but that have not been decontaminated or degassed for further transport are closed in the same manner and with the same guarantees of containment as if they were full; and
- The motor of any tanker trucks and container tankers to be used for the transport of liquids with a flash point of less than 23 degrees Celsius, as well as the vent/exhaust pipes, are placed and protected in a manner that avoids any risk to the load due to motor heat?

14.20 If Class 3 (flammable liquids) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: *[Resolution No. 195/97, Annex I, Section 3.3, B]*

- Entry with illumination devices or flames into a closed vehicle that is loaded with flammable liquids is prohibited, and no apparatus or equipment that can cause ignition of substances are used;
- Flammable materials are never used for the stowage/packing of containers or goods inside vehicles; and
- During the loading and unloading of flammable liquids in bulk, the cisterns or tanks are adequately grounded?

14.21 If Class 4 (flammable solids, substances prone to spontaneous combustion, substances that release flammable gases upon contact with water) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: *[Resolution No. 195/97, Annex I, Section 3.4, A]*

- Packages or containers of Class 4 substances are stowed in vehicles so they are not displaced or submitted to friction or collisions/impacts;
- Division 4.1 dangerous goods is are loaded in amounts insufficient to cause an explosion (determination of this is the responsibility of the shipper), and the presence of impurities in the goods is avoided;
- Packages containing auto-reactive substances, are protected from direct sunlight during transport, and are maintained in areas that are cold, well-ventilated and away from any source of heat;
- Packages containing Division 4.3 products are protected from humidity, and special precautions are taken during handling to avoid any contact with water; and
- Use of easily flammable materials to stow packages in vehicles or containers is prohibited?

14.22 If Division 5.1 (oxidizing substances) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: *[Resolution No. 195/97, Annex I, Section 3.5.1]*

- Measures are taken to ensure that during handling and transport the goods do not become displaced, get knocked over, or fall;

- Prior to being loaded, the transport units are carefully cleaned, and in particular, any waste that could contain fuel is removed; and
- The use of easily/highly flammable materials for stowing packages into vehicles is prohibited?

14.23 If Division 5.2 (organic peroxides) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: *[Resolution No. 195/97, Annex I, Section 3.5.2]*

- The vehicles are designed in such a way that it is impossible for any vapors given off by the goods to enter the driver's cabin;
- The refrigeration devices in freezer vehicles are able to function independently from the propulsion motor of the vehicle; and
- Products are protected from heat, and adequate ventilation is provided during all loading, unloading and transport activities, so that the maximum temperatures that these goods can withstand are not exceeded?

14.24 If any Division 5.2 (organic peroxides) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: *[Resolution No. 195/97, Annex I, Section 3.5.2]*

- Vehicles and containers used for the transport of packages are carefully cleaned prior to being loaded;
- Goods are loaded in amounts insufficient to cause an explosion (determination of this is the responsibility of the shipper);
- Packages are placed into the vehicle or container in a manner so that they can be unloaded one-by-one at the final destination, without the need to reorganize the load;
- Packages are standing upright in the vehicle so they do not fall or flip over and they are protected from harm caused by other packages;
- Highly flammable material is prohibited from being used to stow the goods in vehicles;

- Packages containing goods that easily decompose at ambient temperatures are not placed on top of other merchandise, and they are stowed in a manner that allows easy access;
- Organic peroxides that must have their temperature controlled during transport are provided adequate temperature control (as specified in Appendix 4 of *Resolution No. 195/97*); and
- Measures are taken to ensure that no person's eyes come into contact with organic peroxides?

14.25 If Division 6.1 (toxic substances) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [*Resolution No. 195/97, Annex I, Section 3.6.1, A*]

- Vehicles are equipped with individual personal protective equipment if they transport the following:
 - Volatile toxic substances;
 - Empty containers that have not been decontaminated; or
 - Empty containers that contained products; and
- In case of spills, these vehicles have portable barricades and posters/signs for both isolating the area and for communicating the risky situation, and these emergency materials are located in an area on the vehicle that is easily accessed by the response team?

14.26 If Division 6.1 (toxic substances) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [*Resolution No. 195/97, Annex I, Section 3.6.1, B*]

- In loading, unloading and transfer areas, keeps goods isolated from food products and any other comestible products; and
- Prior to being returned to service, cleans and decontaminates contaminated transport vehicles or containers in a manner previously authorized by the environmental control authority?

14.27 If Division 6.2 (infectious substances) dangerous goods are transported from the facility, does the facility comply with the following requirements: *[Resolution No. 195/97, Annex I, Section 3.6.2, B]*

- In the loading, unloading and transfer areas, keeps goods isolated from food and consumption/comestible products;
- Prior to transport of the goods, obtains approval from the environmental control authority to ship the goods to the receiving destination;
- Confirms that the receiving destination has adequate areas for receiving and opening the packages, with the degree of isolation corresponding to the level of risk of the substances;
- In the case of a spill, ensures that the party responsible for the transport or opening of the containers must comply with the following requirements:
 - Avoids any handling of packages, or ensures as little handling as possible;
 - Inspects adjacent packages to verify if they were contaminated, and separates the ones that were possibly contaminated;
 - Informs the environmental control authority of the incurred losses and possible contamination along the route; and
 - Notifies the sender and intended receiving; and
- Following any discharge, cleans and appropriately treats any vehicles or containers that have been contaminated with disinfectant?

14.28 If any Class 7 (radioactive materials) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: *[Resolution No. 195/97, Annex I, Section 3.7]*

- If a package containing radioactive materials is damaged, has leaks, or has been involved in an accident, the following steps are taken:
 - The affected area is isolated until the arrival of trained personnel, with the exception of those making efforts to save people and combat a fire; and

- The unit of transport, container or involved location is isolated in order to avoid contact by any persons with any released radioactive substances;
- No one remains inside the isolated area until the arrival of trained personnel, with the exception of those making efforts to save people and combat a fire;
- The responsible authority is notified immediately;
- All vehicles, materials or parts of materials that have been contaminated during the transport of radioactive materials are decontaminated immediately and under the supervision of the competent authority; and
- No materials or parts of materials that have been contaminated during the transport of radioactive materials enter back into service until declared safe by the competent authority with regard to radiation levels?

14.29 If Class 8 (corrosive substances) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: *[Resolution No. 195/97, Annex I, Section 3.8]*

- Vehicles and containers to be used in the transport of packages that are characterized as having flammable and oxidizing hazards are carefully cleaned or removed (in particular, any combustible wastes such as paper, grass, etc., are removed); and
- The packages are stowed so they cannot be displaced or broken, and the material used to stow them is fire resistant?

Transport Documentation Requirements

14.30 Do all vehicles entering or leaving the facility have the following documentation: *[Decree No. 779/95, Annex S, Articles 27 and 35c]* and *[Resolution No. 110/97, Articles 2 and 5]*
<RECORD KEEPING>

- Certificates issued by the Secretariat of Transportation authorizing the vehicles and their equipment to transport dangerous goods (for bulk shipments only);
- Certificates documenting that the vehicles have passed the Mandatory Technical Inspection; and

- Original certificates of approval documenting that the drivers have attended the basic mandatory initial and follow-up training courses on transportation of dangerous goods on roadways?

Notes: Drivers must have been issued a Certificate of Basic Obligatory Training of Vehicle Drivers Employed in the Transport of Substances/Merchandise by Road. After completing the Basic Obligatory Training Course, the driver must receive a follow-up training every year with updated information on the transport of dangerous substances. [Resolution No. 65/00, Article 5]

14.31 Does the facility provide transporters of dangerous goods with the following documentation: [Decree No. 779/95, Annex S, Article 35(a) & (b) and 45] and [Resolution No. 720/87, Annexes B & C]

- Bill of lading that includes the following information:
 - Type of dangerous product;
 - Class of transportation, compatibility;
 - Packaging class; and
 - Statement by dispatcher indicating that the goods are well packed and able to withstand normal risks for loading, unloading, transport and storage; and
- Written instructions for accident response including the following information:
 - Type of danger;
 - Safety measures;
 - Fire response planning;
 - Measures in case of breakage, leaks or spills;
 - Measures for transferring goods when vehicles cannot continue the trip; and
 - Emergency telephone number of the fire department, the police, the civil defense and environmental agencies?

Notes: Resolution No. 720/87, Annexes B and C include specific transport requirements regarding accident response planning and requirements in case of fire during transport.

- 14.32** Does the facility confirm that the driver of the transport vehicle has a national driver's license issued by the Undersecretariat of Vehicle Transportation specifically for the transportation of dangerous goods? *[Resolution No. 157/93, Section 1]*
- 14.33** If the facility is registered with the National Register for Precursor Chemicals (NRPC), as indicated in Question 16.4 and its notes, (see Section 16.0 of this protocol), and it subcontracts with a third party to transport the registered chemicals, does it ensure the third-party transporter is also registered with the NRPC? *[Resolution No. 342/07, Article 1]*
- 14.34** If the facility subcontracts with a third party to transport registered chemicals (as indicated in Question 14.33) and the transporter is not registered with the NRPC, does the facility ensure the following documents are presented to the Secretariat for the Program on the Prevention of Drug Addiction and National Fight against Drug Trafficking at least 96 working hours prior to the transport activity: *[Resolution No. 342/07, Articles 2 and 3]*
- A certified copy of the legal instrument that establishes the business relationship between the signatories;
 - A certified copy of the property title of each vehicle that has been subcontracted;
 - A legal declaration that the registered subject is fully responsible for any consequences that may occur during transport operations;
 - A legal declaration that states the itinerary and route and, if applicable, the border crossing to be used; and
 - If applicable, a *Form No. 4- Law No. 25,363* for each vehicle pertaining to a non-registered company that may be declared when the transport operation is refused (“operación de transporte denunciada”) or when the 96 hour deadline cannot be met?

Notes: The National Register for Precursor Chemicals text is available at Estrucplan Online.

Form No. 4-Law No. 25,363 can be accessed by searching for Resolution No. 51/2003 (this Resolution approves the format for forms used as part of the registration process with the NRPC) at the Ministry of Economy and Public Finances “Infoleg” website, as indicated in the notes at the beginning of this protocol section.

As an alternative to the procedure indicated in this question, the facility may apply to the NRPC for a unique and non-transferable certification ("credencial") for any non-NRPC registered third-party transport vehicles it uses, by submitting the following documents to the Secretariat for the Program on the Prevention of Drug Addiction and National Fight against Drug Trafficking: [Resolution No. 342/07, Article 4]

- A certified copy of the legal instrument that establishes the business relationship between the signatories;*
- A certified copy of the property title of each vehicle that has been subcontracted;*
- A legal declaration that the registered party ("sujeto") is fully responsible for any legal consequences that may occur during transport operations; and*
- A Form No. 4- Law No. 25,363 for each declared vehicle pertaining to a non-NRPC registered company.*

The certification must be under the control of the third-party subcontractor on all occasions when registered chemical substances are transported and may only cover the transport operations conducted for the company that applied for the certification. [Resolution No. 342/07, Article 6]

Table 14-1

Incompatible Dangerous Goods

Category	Material	Incompatible with:
Explanation: To determine whether one material in the table is incompatible with another material in the table, match the material description with the category codes listed in the right-hand column. For example, category a (slow explosives or black gunpowder) is incompatible with category 3 (fireworks, torpedo guides).		
CLASS 1.1 EXPLOSIVES		
a	Slow explosives or black gunpowder	c, 3, 9, 10, 11, 12, 13, 14, 15 ^(f)
b	Instantaneous explosives or propellant explosives	c, d, g, 3, 9, 10, 11 ^(c) , 12, 13, 14, 15 ^(f)
c	Initiation or priming explosives, liquid ("humid"): diazodinitrophenol, mercury fulminate, guanyl, nitrosamine, guanylidene lead acid hidrazine, nitromannite, nitrosoguanidine, pentaerythritol, tetranitrate, tetrazene, lead mono-nitro tri-resorcinate, lead styphnate	a, b, c, d, e, f, g, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 ^(f)
d	Detonators with or without safety match (including electric detonators), primed detonators	b, c, e, f, 3 ^(a) , 9 ^(a) , 10 ^(a) , 11 ^(a) , 12 ^(a) , 13 ^(a) , 14 ^(a) , 15 ^(f)
e	Ammunition for cannon with explosive missiles, gas projectiles, smoke projectiles, illuminating projectiles or caps, ammunition for small weapons with incendiary projectiles; ammunition for small weapons with explosive projectiles; ammunition for rockets with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles, propellants (explosives) and supplementary charges (explosives) without detonators	c, d, g, 3, 9, 10, 11, 12, 13, 14, 15 ^(f)
f	Class 1.1 explosive projectiles, bombs, torpedoes, mines, hand or dummy grenades, (explosives), jet propellant units (calves); Class 1.1 electric exploders, reaction propellants; Class 1.1. rocket engines; Class 1.1 electric exploders; Class 1.1 rocket engines	c, d, g, 3, 9, 10, 11, 12, 13, 14, 15 ^(f)
g	Class 1.1 detonating matches with or without radioactive components	b, c, e, f, 3, 9, 10, 11, 12, 13, 14, 15 ^(f)

Table 14-1

Incompatible Dangerous Goods (Cont'd)

Category	Material	Incompatible with:
CLASS 1.2 EXPLOSIVES		
1	Ammunition for cannons with empty, inert charge or solid projectiles, or without projectiles, ammunition with empty, inert charge or solid projectiles	c, 12 ^(b) , 14
2	Class 1.2 propellant explosives, propellant or reaction units; Class 1.2 igniters, reaction propellants; Class 1.2 rocket engines; Class 1.2 rocket engines (liquid); Class 1.2 rocket engine igniters; Class 1.2 initiating cartridges, reaction engines	c, 12 ^(b) , 14
3	Fireworks, torpedo guides	a, b, c, d ^(a) , e, f, g, 14
CLASS 1.3, 1.4 AND 1.5 EXPLOSIVES		
4	Ammunition for small weapons	c
5	Caps for cannon or small weapons, bags of empty cartridges, black gunpowder igniters, cases or primed empty cartridges, empty grenades, primers, combination primers or percussion caps, toy caps, cutters of explosive wires, explosive rivets	c
6	Percussion detonators, tracing detonators, tracers	c
7	Class 1.3, 1.4, 1.5 time, combination, detonation detonators	c
8	Matches of detonating gunpowder, safety detonators, baton matches, match lighters, time electric igniters, electric detonators, instantaneous detonators, and ignition cord	c
9	Ordinary fireworks	a, b, c, d ^(a) , e, f, g, 14
OTHER DANGEROUS MATERIALS		
10	Flammable liquids or gases, classified flammable liquids or gases	a, b, c, d ^(a) , e, f, g, 14
11	Flammable solids or oxidizing materials, flammable solid, oxidizer or classified organic peroxide	a, b ^(c) , c, d ^(a,e) , e, f, g, 12 ^(b) , 14
12	Corrosive liquids, classified corrosive	a, b, c, d ^(a) , e, f, g, 1 ^(b) , 2 ^(b) , 11 ^(b) , 12
13	Nonflammable gases, classified nonflammable gases (specified)	a, b, c, d ^(a) , e, f, g
14	Poisonous gases or liquids in projectile cylinders or bombs, classified poisonous gas	a, b, c, d, e, f, g, 1, 2, 3, 9, 10, 11, 12
15	Radioactive materials	a, b, c, d, e, f, g

Notes:

- (a) Explosive detonating electric explosive detonators, in amounts not exceeding 1,000 may also be loaded and transported together with materials in categories 3, 9, 10, 11, 12 and 13. It is forbidden to load and transport any number of explosive detonators or explosive electric detonators together with materials mentioned in categories b, c, e, or f.
- (b) Per requirements set forth in *Resolution No. 233/86, Section 2*, unless they are loaded into the opposite ends of the truck, known liquids must not be loaded together with flammable solids, oxidizing materials, cannon ammunition, with or without projectiles, explosives and propellants, without prior authorization from the competent authority.
- (c) Class 1.1 and Class 1.2 explosives must not be loaded or stored with chemical ammunition containing flammable charges or white phosphorus either with or without explosive charge.
- (d) Blasters (explosive), detonators (explosive) or supplementary charges (explosive) without detonators may be loaded with certain of the materials mentioned, except those listed in categories c, d, 3, 9, 10, 11, 12, 13, 14 and 15.
- (e) Not including carbon nitrate or ammonium nitrate, fertilizing grade, which may be loaded, transported or stored with instantaneous explosives or explosive caps or electric explosive caps and priming detonators.
- (f) Normal uranium, exhausted uranium, thorium material in solid form may also be loaded and transported with the materials mentioned in categories a, b, c, d, e, f, and g.
- (1) Electric batteries already loaded must neither be loaded in the same vehicle as nor stored together with any Class 1.1 explosive.
- (2) Cyanides or cyanide mixtures must neither be loaded nor stored together with acids or corrosive liquids.
- (3) Gas identification kits may be loaded and transported with all the materials mentioned except those listed in category c.
- (4) When nitric acid is loaded into the same vehicle as other acids or corrosive liquids in carboys/demijohn bottles, it must be separated from the other carboys/demijohns. When a 5.08 cm x 15.24 cm stand is placed at the vehicle border, it must be nail-studded onto the floor of the vehicle at a minimum distance of 30.48 cm from the nitric acid carboys/demijohns and filled with sand, sifted ashes or other non-combustible absorbing materials.
- (5) Per requirements set forth in *Resolution No. 233/86, Section 2*, smokeless gunpowder for small weapons in amounts not exceeding a net weight of 45.36 Kg. per vehicle must be classified as flammable solid for transportation purposes when such classification is approved by the competent authority.

Source: Resolution No. 720/87, Annex B.

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is intended for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter one does not contain the electronic links and other functionality contained in the MS Word version.

Each of the questions from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, there are electronic links back to the original protocol document. To return to where you were in the AQC after following a link, use the “Return to Audit Quick Check” button located on the Audit Quick Check Toolbar.

Audit Quick Check Toolbar

The AQC Toolbar contains several automated functions and should be visible when you open the AQC document. To activate the toolbar if it is NOT visible, select View | Toolbars | and then click on Audit Quick Check Toolbar. You may move the toolbar to anyplace on the document by left clicking anywhere inside of the upper portion of the Toolbar (dark blue area) and dragging it to the desired location.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X’s to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

At the end of the AQC there is a section entitled, Additional Questions. You may add more questions at this point. Examples might include corporate requirements or best management practices. We have provided space for the insertion of several additional questions. If you wish to delete these additional spaces, select the row(s) you want deleted and press shift+delete. To add more questions, including the check boxes, copy and paste the last row of the table. To do this, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Then, copy the information in the row above by placing the cursor on the far left side of the row to be copied, outside the table margin, left click to highlight the information to be copied, and then right click and click on “Copy.” Lastly, move the cursor into the empty row and paste the copied information (Control C). You can continue to sequentially number the questions by putting your cursor on the existing number and changing it. Use “Control Tab” to create the spacing between the question number and the text of the question.

Sorting Responses and Transferring Information

There is a sort feature that you may want to use following completion of the audit. A sort box appears on the far right side of the toolbar. Press “Sort By” and then four choices will be identified, three of which correspond to a specific column number. For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click on Column 3 (unless you have customized the column headings and re-organized them, in which case you will select the column number of interest to you). Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

The fourth sort choice, Sequential, will sort the responses sequentially by column number (i.e., Column 1 responses first, followed by Column 2 responses, etc.).

WARNING: Once the sort feature has been used, you cannot automatically revert back to the original order unless you hit the “Undo Typing” symbol in the MS Word Toolbar. As a result, it is recommended that you save the “sorted” file to a different file name. In that way, you can preserve the original Audit Quick Check information, including original ordering of that information, plus the sorted information.

Transferring Information

Once you have collated all of the Does Not Comply questions (or whatever category of questions in which you have an interest), you can use “Block” and “Copy” to transfer that information to any other document. This feature will help in the eventual audit report writing.

Printing Quick Checklist

Click on the Print Quick Check button at the end of the document to print out only the Audit Quick Check; it will print to whatever you have designated as your default printer. If you are outside of your office and wish to print to a local printer, you will need to change the default printer setting on your computer to a local printer before using the Print Quick Check button.

14.0 TRANSPORT OF DANGEROUS GOODS

AUDIT QUICK CHECK

SITE: _____

DATE: _____

ASSESSOR: _____

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
Transport of Dangerous Goods			
See protocol for notes.			
Labels and Placards			
National			
14.1 If dangerous goods are transported or consigned off site, have they been identified and classified in accordance with the listing described in the notes at beginning of this protocol section, and are they labeled, handled and shipped in accordance with that classification? [Resolution No. 195/97, Sections 4.3 and 4.4 of Annex I] Comments:			
14.2 If dangerous goods are sent off site, do the containers and vehicles display the appropriate transport labels and placards? [Resolution No. 195/97, Article, Section 7.4 of Annex I] and [Decree No. 779/95, Annex S, Article 45(d)] See protocol for notes. Comments:			
14.3 Do the transportation labels and placards have the following characteristics: [Resolution No. 195/97, Sections 7.1 through 7.4] – Diamond-shaped; – Indelible characters; – Weather resistant when affixed to vehicles; – Label size of at least 100 mm by 100 mm on containers; and – Placard size of at least 250 mm by 250 mm when affixed to vehicles or trailers?			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
Comments:			
14.4 Are transport labels and placards positioned so they are visible? [Resolution No. 195/97, Sections 7.1 through 7.4] Comments:			
Transport Preparation and Vehicles			
14.5 Does the facility ensure that dangerous goods are transferred to the transporter with the containers packed and conditioned according to the manufacturer's instructions and in accordance with the packaging groups and container types set forth in Chapter VIII (containers) and IX (intermediate bulk containers) of Annex I of Resolution No. 195/97? [Decree No. 779/95, Annex S, Article 45(c)]; [Resolution No. 720/87, Annexes D1 and D2] and [Resolution No. 195/97, Chapters VIII and IX] See protocol for notes. Comments:			
14.6 If the facility transports dangerous goods in the same vehicle and/or container with other incompatible goods, does it meet the requirements of Table 14-1? [Resolution No. 720/87, Annex B] Comments:			
14.7 Prior to placing dangerous goods into a bulk transport vehicle, does the facility verify that the transporter has an affidavit that states the following: [Decree No. 779/95, Annex S, Article 45(g)] – What product was last shipped in the transporter's bulk container; and – What decontamination practices were used after the last shipment? Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
14.8 Does the facility ensure that any unit of transport that is loaded with dangerous goods at the facility meets the following requirements: [Resolution No. 195/97, Annex I, Section 2.1.1] – It is equipped with portable fire extinguishers with sufficient capacity to extinguish the following types of fires: – Of the motor or any other part of the unit of transport; or – Of the load (in cases where conformance with the preceding bullet is not possible); – It is equipped with a set of tools that is adequate for emergency repairs during travel; and – It is equipped with a minimum of two chocks that are capable of holding the vehicle in place and that are compatible with the load in the vehicle? See protocol for notes. Comments:			
14.9 If the facility transports any dangerous goods, does it comply with the following requirements: [Resolution No. 195/97, Annex I, Section 2.1.2 through 2.1.4] – Cistern or tanker trucks used in the transport of dangerous goods, as well as all the fixtures/equipment that come into contact with the product (e.g., pumps, valves and lubricants used) are not damaged/corroded by the substance contained, and do not form any harmful or dangerous combinations with the substance; – If, after the discharge of a vehicle or container that has received a load of dangerous goods, it is demonstrated that a spill of the contents occurred, the vehicle is cleaned and decontaminated immediately and prior to any subsequent loading of any substance; – Prior to being loaded again, vehicles or containers previously loaded with dangerous goods in bulk are cleaned and decontaminated, unless if the contact between the previous and intended substances will not pose any additional risk; – Unloaded vehicles or containers that still pose the same risks and hazards as when loaded are treated as if they were loaded; and – Vehicles that are contaminated on the external surfaces are prohibited from circulating ever again or until they are decontaminated? Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
14.10 If the facility transports any dangerous goods, does it comply with the following requirements: [Resolution No. 195/97, Annex I, Section 2.2] – Each load is stabilized and stacked in the vehicle and supported by appropriate means in a manner that avoids any displacement of any part of the load or collisions/impacts with another part of the load or with the walls of the vehicle; – If the load consists of different categories of dangerous goods that are compatible with one another (see Table 14-1), these containers are stowed separately from the other non-dangerous goods so that access to is the dangerous goods possible in the case of an emergency; – It is prohibited to load any container of dangerous goods on top of any fragile package, and any easily/highly flammable materials shall not be used in the stowing or stacking of these fragile packages; – Smoking is prohibited during the handling of dangerous goods, in the proximity of either the packages or the vehicles, or inside the vehicles; and – Entering vehicles with illumination equipment or flames, with equipment or devices capable of causing the ignition of products or their gases or vapors, is prohibited? Comments:			
14.11 If the facility transports any dangerous goods, does it comply with the following requirements: [Resolution No. 195/97, Annex I, Sections 2.2.3 through 2.2.7] – With the exception of cases where the use of a motor is necessary for the operation of pumps or other mechanisms that enable loading or unloading, the vehicle motor is turned off during the entire loading operation; – Packages that are composed of materials that are sensitive to humidity are transported in covered vehicles or are themselves covered with a tarp/cover; – Loading incompatible dangerous goods, or including non-dangerous goods within the same vehicle when the possibility of either direct or indirect risk to persons, property or the environment exists is prohibited; – Goods that easily polymerize are only transported if measures are in place to prevent polymerization during transport; – Vehicles and equipment that have been used to transport goods or merchandise capable of contaminating them are inspected after unloading to guarantee that there are no off-loading wastes; and – If the above inspection indicates there is contamination, the vehicles and/or equipment are carefully cleaned and decontaminated in			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
compliance with the applicable requirements (e.g., for hazardous and solid wastes, see Section 4.0 of this protocol)? Comments:			
14.12 Does the facility ensure that, in any passenger vehicles, only dangerous goods for personal use (e.g., medical or toiletries) are allowed, and these are only allowed in quantities not exceeding 1 kilogram or 1 liter per passenger, as long as no quantities of Class 1 (explosive) or Class 7 (radioactive) dangerous goods are transported? [Resolution No. 195/97, Annex I, Section 2.3] Comments:			
14.13 When dispatching dangerous goods in bulk, does the facility verify that vehicles used for these purposes are manufactured in compliance with international safety standards as certified by the National Committee for Transit Safety? [Decree No. 779/95, Annex S, Article 9.1] See protocol for notes. Comments:			
14.14 If the facility transports any goods or dangerous goods on public roads in any cistern tanks, cistern containers and/or iso-containers ("iso-contenedores") with a capacity of over three cubic meters, have they been inspected according to the table in the note below this question and the following schedule: [Resolution No. 905/06, Articles 1 and 3 and Annex I] – For equipment older than 10 years, the initial inspections indicated in the table below were completed within 3 months of the promulgation of Resolution No. 905/06 on November 13, 2006; and – For equipment less than 10 years old, the initial inspections were completed within 6 months of the promulgation of Resolution No. 905/06 on November 13, 2006? See protocol for notes. Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
Requirements for the Transport of Specific Classes and Divisions of Dangerous Goods			
See protocol for notes.			
14.15 If Class 1 (explosive) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.1, A] – Prior to loading these goods, the vehicle is inspected to ensure that there are no structural defects or deterioration of any of the structural components; – Explosive substances are transported in closed box vehicles, or are covered with a cover/tarp that is impermeable and resistant to fire, and affixed in a manner that does not run the risk of becoming loosened; and – Fireworks classified as 1.1.G, 1.2.G or 1.3.G and dangerous goods classified as 1.1.C, 1.1.D, 1.1.G, 1.3.C and 1.3.G, that can release dust, are not transported in containers with metallic floors or covering/lining? Comments:			
14.16 If any Class 1 (explosive) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.1, B] – Highly flammable materials are not used for stabilizing and stacking (stowing) the goods; – The materials used to stow the goods prevent the goods from slipping or falling, and protect the goods from any friction or collision/impacts; and – The goods are stowed in a manner that allows unloading of the goods one-by-one and without having to re-pack or shuffle the load at the final destination? Comments:			
14.17 If Class 2 (flammable, non-toxic, or toxic gases) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.2, A] – The electrical equipment of vehicles transporting any flammable gases is protected in a manner that prevents the generation of sparks; and – Closed box vehicles used to transport containers of liquefied compressed or chemically unstable gases are equipped with adequate ventilation capabilities?			

		<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
		Not Applicable	Complies	Does not Comply
	Comments:			
14.18	If Class 2 (flammable, non-toxic, or toxic gases) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.2, B] - For the transport of gases which present a risk of poisoning, the vehicle personnel are provided with masks/respirators that are appropriate for the gases being transported; - Entry with illumination devices or flames into a closed vehicle that is loaded with flammable gases is prohibited, and no apparatus or equipment that can cause ignition of substances are used; - During loading, unloading or transfer operations, the containers or packages are not exposed to heat, dragged or subjected to collisions or shock; and - Containers are not stowed in vehicles in a manner in which they can become displaced, fall or flip over? Comments:			
14.19	If Class 3 (flammable liquids) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.3, A] - Tanker trucks and container tankers that previously contained Class 3 dangerous goods but that have not been decontaminated or degassed for further transport are closed in the same manner and with the same guarantees of containment as if they were full; and - The motor of any tanker trucks and container tankers to be used for the transport of liquids with a flash point of less than 23 degrees Celsius, as well as the vent/exhaust pipes, are placed and protected in a manner that avoids any risk to the load due to motor heat? Comments:			
14.20	If Class 3 (flammable liquids) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.3, B] Entry with illumination devices or flames into a closed vehicle that is loaded with flammable liquids is prohibited, and no apparatus or equipment that can cause ignition of substances are used;			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
– Flammable materials are never used for the stowage/packing of containers or goods inside vehicles; and – During the loading and unloading of flammable liquids in bulk, the cisterns or tanks are adequately grounded? Comments:			
14.21 If Class 4 (flammable solids, substances prone to spontaneous combustion, substances that release flammable gases upon contact with water) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.4, A] – Packages or containers of Class 4 substances are stowed in vehicles so they are not displaced or submitted to friction or collisions/impacts; – Division 4.1 dangerous goods is are loaded in amounts insufficient to cause an explosion (determination of this is the responsibility of the shipper), and the presence of impurities in the goods is avoided; – Packages containing auto-reactive substances, are protected from direct sunlight during transport, and are maintained in areas that are cold, well-ventilated and away from any source of heat; – Packages containing Division 4.3 products are protected from humidity, and special precautions are taken during handling to avoid any contact with water; and – Use of easily flammable materials to stow packages in vehicles or containers is prohibited? Comments:			
14.22 If Division 5.1 (oxidizing substances) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.5.1] – Measures are taken to ensure that during handling and transport the goods do not become displaced, get knocked over, or fall; – Prior to being loaded, the transport units are carefully cleaned, and in particular, any waste that could contain fuel is removed; and – The use of easily/highly flammable materials for stowing packages into vehicles is prohibited? Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
14.23 If Division 5.2 (organic peroxides) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.5.2] – The vehicles are designed in such a way that it is impossible for any vapors given off by the goods to enter the driver's cabin; – The refrigeration devices in freezer vehicles are able to function independently from the propulsion motor of the vehicle; and – Products are protected from heat, and adequate ventilation is provided during all loading, unloading and transport activities, so that the maximum temperatures that these goods can withstand are not exceeded? Comments:			
14.24 If any Division 5.2 (organic peroxides) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.5.2] – Vehicles and containers used for the transport of packages are carefully cleaned prior to being loaded; – Goods are loaded in amounts insufficient to cause an explosion (determination of this is the responsibility of the shipper); – Packages are placed into the vehicle or container in a manner so that they can be unloaded one-by-one at the final destination, without the need to reorganize the load; – Packages are standing upright in the vehicle so they do not fall or flip over and they are protected from harm caused by other packages; – Highly flammable material is prohibited from being used to stow the goods in vehicles; – Packages containing goods that easily decompose at ambient temperatures are not placed on top of other merchandise, and they are stowed in a manner that allows easy access; – Organic peroxides that must have their temperature controlled during transport are provided adequate temperature control (as specified in Appendix 4 of Resolution No. 195/97); and – Measures are taken to ensure that no person's eyes come into contact with organic peroxides? Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
14.25 If Division 6.1 (toxic substances) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.6.1, A] – Vehicles are equipped with individual personal protective equipment if they transport the following: – Volatile toxic substances; – Empty containers that have not been decontaminated; or – Empty containers that contained products; and – In case of spills, these vehicles have portable barricades and posters/signs for both isolating the area and for communicating the risky situation, and these emergency materials are located in an area on the vehicle that is easily accessed by the response team? Comments:			
14.26 If Division 6.1 (toxic substances) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.6.1, B] – In loading, unloading and transfer areas, keeps goods isolated from food products and any other comestible products; and – Prior to being returned to service, cleans and decontaminates contaminated transport vehicles or containers in a manner previously authorized by the environmental control authority? Comments:			
14.27 If Division 6.2 (infectious substances) dangerous goods are transported from the facility, does the facility comply with the following requirements: [Resolution No. 195/97, Annex I, Section 3.6.2, B] – In the loading, unloading and transfer areas, keeps goods isolated from food and consumption/comestible products; – Prior to transport of the goods, obtains approval from the environmental control authority to ship the goods to the receiving destination; – Confirms that the receiving destination has adequate areas for receiving and opening the packages, with the degree of isolation corresponding to the level of risk of the substances; – In the case of a spill, ensures that the party responsible for the transport or opening of the containers must comply with the following requirements: – Avoids any handling of packages, or ensures as little handling as possible;			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
– Inspects adjacent packages to verify if they were contaminated, and separates the ones that were possibly contaminated; – Informs the environmental control authority of the incurred losses and possible contamination along the route; and – Notifies the sender and intended receiving; and – Following any discharge, cleans and appropriately treats any vehicles or containers that have been contaminated with disinfectant? Comments:			
14.28 If any Class 7 (radioactive materials) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.7] – If a package containing radioactive materials is damaged, has leaks, or has been involved in an accident, the following steps are taken: – The affected area is isolated until the arrival of trained personnel, with the exception of those making efforts to save people and combat a fire; and – The unit of transport, container or involved location is isolated in order to avoid contact by any persons with any released radioactive substances; – No one remains inside the isolated area until the arrival of trained personnel, with the exception of those making efforts to save people and combat a fire; – The responsible authority is notified immediately; – All vehicles, materials or parts of materials that have been contaminated during the transport of radioactive materials are decontaminated immediately and under the supervision of the competent authority; and – No materials or parts of materials that have been contaminated during the transport of radioactive materials enter back into service until declared safe by the competent authority with regard to radiation levels? Comments:			
14.29 If Class 8 (corrosive substances) dangerous goods are transported from the facility, does the facility ensure that the following requirements are met: [Resolution No. 195/97, Annex I, Section 3.8] – Vehicles and containers to be used in the transport of packages that are characterized as having flammable and oxidizing hazards are carefully cleaned or removed (in particular, any combustible wastes such as paper, grass, etc., are removed); and			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
The packages are stowed so they cannot be displaced or broken, and the material used to stow them is fire resistant? Comments:			
Transport Documentation Requirements			
14.30 Do all vehicles entering or leaving the facility have the following documentation: [Decree No. 779/95, Annex S, Articles 27 and 35c] and [Resolution No. 110/97, Articles 2 and 5] <RECORD KEEPING> - Certificates issued by the Secretariat of Transportation authorizing the vehicles and their equipment to transport dangerous goods (for bulk shipments only); - Certificates documenting that the vehicles have passed the Mandatory Technical Inspection; and - Original certificates of approval documenting that the drivers have attended the basic mandatory initial and follow-up training courses on transportation of dangerous goods on roadways? See protocol for notes. Comments:			
14.31 Does the facility provide transporters of dangerous goods with the following documentation: [Decree No. 779/95, Annex S, Article 35(a) & (b) and 45] and [Resolution No. 720/87, Annexes B & C] - Bill of lading that includes the following information: - Type of dangerous product; - Class of transportation, compatibility; - Packaging class; and - Statement by dispatcher indicating that the goods are well packed and able to withstand normal risks for loading, unloading, transport and storage; and - Written instructions for accident response including the following information: - Type of danger; - Safety measures; - Fire response planning; - Measures in case of breakage, leaks or spills; - Measures for transferring goods when vehicles cannot continue the trip; and			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
– Emergency telephone number of the fire department, the police, the civil defense and environmental agencies? See protocol for notes. Comments:			
14.32 Does the facility confirm that the driver of the transport vehicle has a national driver's license issued by the Undersecretariat of Vehicle Transportation specifically for the transportation of dangerous goods? [Resolution No. 157/93, Section 1] Comments:			
14.33 If the facility is registered with the National Register for Precursor Chemicals (NRPC), as indicated in Question 16.4 and its notes, (see Section 16.0 of this protocol), and it subcontracts with a third party to transport the registered chemicals, does it ensure the third-party transporter is also registered with the NRPC? [Resolution No. 342/07, Article 1] Comments:			
14.34 If the facility subcontracts with a third party to transport registered chemicals (as indicated in Question 14.33) and the transporter is not registered with the NRPC, does the facility ensure the following documents are presented to the Secretariat for the Program on the Prevention of Drug Addiction and National Fight against Drug Trafficking at least 96 working hours prior to the transport activity: [Resolution No. 342/07, Articles 2 and 3] – A certified copy of the legal instrument that establishes the business relationship between the signatories; – A certified copy of the property title of each vehicle that has been subcontracted; – A legal declaration that the registered subject is fully responsible for any consequences that may occur during transport operations; – A legal declaration that states the itinerary and route and, if applicable, the border crossing to be used; and – If applicable, a Form No. 4- Law No. 25,363 for each vehicle pertaining to a non-registered company that may be declared when the transport operation is refused ("operación de transporte denunciada") or when the 96 hour deadline cannot be met?			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
See protocol for notes.			
Comments:			
14.35			
Comments:			
14.36			
Comments:			
14.37			
Comments:			

To sort QC results, please use the Sort By options

located on the Audit Quick Check Toolbar

Be sure your cursor is within the checklist before using this option.

15.0 INDUSTRIAL HYGIENE

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

– Work Environments.....	15-6
– Workplace Illumination.....	15-7
– Requirements for Display Screens	15-8
– Workplace Cleanliness	15-10
– Room Dimensions and Space	15-11
– Rest Areas	15-11
– Drinking Water	15-12
– Changing Facilities.....	15-12
– Personal Protective Equipment (PPE).....	15-13
– Prohibition of Certain Specified Agents or Work Activities	15-14
– Evaluation of Chemical Exposure Risks	15-17
– Medical Surveillance	15-20
– Exposure to Carcinogens and Mutagens	15-24
– Exposure to Biological Agents	15-29
– Exposure to Legionella	15-34
– Exposure to Occupational Noise	15-37
– Exposure to Mechanical Vibrations	15-39
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Tables or Appendices referenced in the protocol are located at the end of this section, along with our audit scorecard, entitled Audit Quick Check. This protocol applies to facilities located throughout Spain.

Spanish legislation can be accessed by searching the database of the Spanish Gazette (Boletín Oficial del Estado – BOE) at the following website:

http://www.boe.es/aeboe/consultas/bases_datos/iberlex.php (last accessed in October 2009).

EU legislation can be obtained by performing a “Natural Search” on the document number at: http://eur-lex.europa.eu/RECH_naturel.do (last accessed in October 2009). Individual amendments to, as well as consolidated versions of, the legislation can be viewed by selecting the “Bibliographic Notice.”

Key legislation and regulations covered in this protocol are noted as follows:

National

- **Royal Decree 363/1995 of 10 March 1995, Pertaining to Notification of New Dangerous Substances and Their Classification, Packaging and Labeling** (Real Decreto 363/1995) [*Royal Decree 363/1995, as amended through Royal Decree 1802/2008 of 3 November 2008*]. This Royal Decree addresses requirements pertaining to the notification of new dangerous substances and their classification, packaging and labeling. Requirements include provisions on exposure related to carcinogens and mutagens.
- **Law 31/1995 of 8 November 1995, on the Prevention of Work-Related Risks** (Ley 31/1995) [*Law 31/1995, as amended through Law 54/2003 of 12 December 2003*]. This Law establishes the basic principles and rights in worker health and safety protection. Under the Law, workers are entitled to effective protection in matters of occupational health and safety and it is the duty of the employer to protect the worker from work-related risks. These requirements include medical surveillance under certain conditions.
- **Royal Decree 39/1997 of 17 January 1997, Approving the Regulation on Prevention Services** (Real Decreto 39/1997) [*Royal Decree 39/1997, as amended through Royal Decree 298/2009 of 6 March 2009*]. This Royal Decree establishes requirements for the prevention of occupational risks, which are based on an occupational risk assessment, and require an integrated plan for the facility as a response to all identified risks. This Royal Decree also includes medical surveillance requirements where certain risks are present. The most recent amendment to this Royal Decree, *Royal Decree 298/2009*, added Annexes VII and VIII, which contain lists of agents and procedures that entail risks for pregnant women, their fetuses, and nursing children.
- **Royal Decree 413/1997 of 21 March 1997, Operational Protection of External Workers with Risk of Exposure to Ionizing Radiation for Work in Controlled Areas** (Real Decreto 413/1997) [*Royal Decree 413/1997*]. This Royal Decree specifies requirements for outside workers who perform work in the controlled areas of the facility.

- **Royal Decree 486/1997 of 14 April 1997, Establishing the Minimum Health and Safety Requirements in the Workplace** (Real Decreto 486/1997) [Royal Decree 486/1997, as amended through Royal Decree of 2177/2004 of 12 November 2004]. This Royal Decree specifies minimum health and safety measures for the workplace. It incorporates the requirements of *EU Directive 89/654/EEC*, which specifies such measures, into Spanish law. Requirements regarding the workplace environment are addressed in this section of the protocol.
- **Royal Decree 488/1997 of 14 April 1997, Minimum Safety and Health-Related Requirements for Work with Equipment with Display Screens** (Real Decreto 488/1997) [Royal Decree 488/1997]. This Royal Decree establishes minimum health and safety requirements for the use of equipment with display screens and transposes *EU Directive 90/270/EEC* into Spanish law. Requirements pertaining to safety measures for equipment and work environments, risk evaluations, health monitoring, and preventive measures, are addressed in this portion of the protocol.
- **Royal Decree 664/1997 of 12 May 1997, on the Protection of Workers Against Risks Related to the Exposure of Biological Agents in the Workplace** (Real Decreto 664/1997) [Royal Decree 664/1997, as amended through Order of 25 March 1998]. This Royal Decree specifies requirements for biological agents. Requirements pertaining to worker exposure evaluations, preventive measures, medical monitoring, documentation, information and training for workers, and informational submittals, are addressed in this section of the protocol. Annex II of *Royal Decree 664/1997*, which lists and classifies biological agents, was modified by the *Order of 25 March 1998*.
- **Royal Decree 773/1997 of 30 May 1997, Providing Minimum Health and safety Requirements Relating to the Use of Personal Protective Equipment by Workers** (Real Decreto 773/1997) [Royal Decree 773/1997]. This Royal Decree establishes requirements for the use of personal protective equipment in activities that present hazards to workers, including a non-exhaustive list of types of personal protective equipment (PPE), activities requiring the use of PPE and information for evaluating PPE. This Royal Decree transposes *EU Directive 89/656/EEC* into Spanish law.
- **Royal Decree 665/1997 of 5 December 1997, on the Protection of Workers from the Risks to Exposure to Carcinogens at Work** (Real Decreto 665/1997) [Royal Decree 665/1997, as amended through Royal Decree 349/2003 of 21 March 2003]. This Royal Decree is intended to protect workers against the health and safety risks associated with exposure to carcinogens at work, including the prevention of such risks. It sets forth the minimum requirements in this area and transposes *EU Directive 90/394/EEC* into Spanish law. This Royal Decree is further amended by *Royal Decree 1124/2000* and by *Royal Decree 349/2003*. The scope of this Royal Decree was expanded to include mutagenic

substances. *Royal Decree 363/1995* is referenced in this Royal Decree regarding the classification of carcinogens and mutagens.

- **Royal Decree 1836/1999 of 3 December 1999, Approving the Regulations on Nuclear and Radioactive Installations** (Real Decreto 1839/1999) [*Royal Decree 1836/1999, as amended through Royal Decree 35/2008 of 3 December 2008*]. This Royal Decree specifies requirements for facilities operating nuclear and radioactive installations. Requirements pertaining to project approvals, and construction and start-up permits, are addressed in this portion of the protocol. Its Annex I, on the classification of nuclear and radioactive installations, has been amended by *Royal Decree 783/2001* and *Instruction IS/05 of 26 February 2003*.
- **Royal Decree 374/2001 of 6 April 2001, on Protection of Workers against Chemical Agents** (Real Decreto 374/2001) [*Royal Decree 374/2001*]. This Royal Decree establishes specific risk assessment, exposure control methods and surveillance requirements regarding the use of chemical agents in the workplace.
- **Royal Decree 783/2001 of 6 July 2001, Which Approves the Regulations on Protection Against Ionizing Radiation** (Real Decreto 783/2001) [*Royal Decree 783/2001*]. This Royal Decree repeals the requirements of the *Royal Decree 53/1992* and, in conjunction with *Royal Decree 1836/1999*, transposes the requirements of *EU Directive 96/29/Euratom*. It establishes requirements for facilities that have sources of ionizing radiation where there may be a risk of worker exposure to, as well as other work activities that involve the presence of, natural radiation sources that lead to significant increases in exposure. It also sets forth dose limitations along with associated requirements involving the implementation of protective measures in the workplace, medical monitoring/surveillance, and record keeping.
- **Royal Decree 865/2003 of 4 July 2003, Establishing Sanitary Criteria for the Prevention and Control of Legionella** (Real Decreto 865/2003) [*Royal Decree 865/2003*]. This Royal Decree repeals the requirements of *Royal Decree 909/2001* and establishes notification and maintenance requirements for certain types of systems and installations, which are classified as having an increased risk of propagating the legionella bacterium.
- **Instruction IS-07/2005 of 22 June 2005** (Instrucción IS-07, de 22 de junio de 2005) [*Instruction IS-07/2005*]. This Instruction establishes a licensing requirement for supervisors and operators in the following types of facilities: nuclear medicine, radiotherapy, laboratories with non-encapsulated sources, industrial radiography, and activities involving process control, analytical techniques, and activities with limited radiological risks.

- **Instruction IS-08/2005 of 27 July 2005** (Instrucción IS-08, de 27 de julio de 2005) [*Instruction IS-08/2005*]. This Instruction establishes a requirement for certain large radioactive installations to have a Radiological Protection Service or a Radiological Technical Protection Unit to provide health services for employees working with radiation.
- **Royal Decree 1311/2005 of 4 November 2005, on the Minimum Health and Safety Requirements Regarding the Exposure of Workers to the Risks Arising from Physical Agents (Vibration)** (Real Decreto 1311/2005) [*Royal Decree 1311/2005, as amended through Royal Decree 330/2009 of 13 March 2009*]. This Royal Decree specifies requirements for the protection from the risks arising from vibrations owing to their effects on the health and safety of workers. Requirements pertaining to exposure evaluations of mechanical vibrations, exposure limits, administrative and technical abatement measures, documentation and record keeping, are addressed in this protocol.
- **Royal Decree 286/2006 of 10 March 2006, on Protection of Workers from the Risks of Exposure to Noise** (Real Decreto 286/2006) [*Royal Decree 286/2006*]. This Royal Decree specifies requirements for the protection of workers from the risk of exposure to noise as well as requirements for hearing protection. Requirements pertaining to noise exposure evaluations, noise exposure limits, administrative and technical abatement measures, personal protective equipment for hearing protection, noise monitoring techniques, documentation and record keeping are addressed in this protocol.

European Union

None.

This protocol section updates information contained in the prior version (2007). Specific additions, deletions, and other changes made relative to this earlier version of the protocol are summarized in Appendix 15-A.

Industrial Hygiene

Notes: The term “sufficient,” used throughout this protocol section” is not defined in the legislation.

Work Environments

15.1 In any enclosed work areas, does the facility meet the following conditions: *[Royal Decree 486/1997, Annex III, 3 a-b]*

- The temperature where sedentary work is conducted is between 17 and 27 degrees Celsius;
- The temperature where light work is conducted is between 14 and 25 degrees Celsius; and
- Relative humidity is between 30 and 70 percent, except where risk of static electricity exists, in which case the upper limit is 50 percent?

Notes: “Light” and “sedentary” work are not further defined in Royal Decree 486/1997.

15.2 Does the facility ensure that workers are not exposed, in a continuous or frequent manner, to air currents that exceed the following limits: *[Royal Decree 486/1997, Annex III, 3 c]*

- For workers in work environments at normal temperatures (not defined): 25 m/s;
- For sedentary work in hot environments (not defined): 0.5 m/s; and
- For non-sedentary work in hot environments: 0.75 m/s?

Notes: These limits do not apply to either air currents used to prevent stress in work areas with exposures to intense heat, or to air conditioning, for which the limits are 0.25 m/s in the case of sedentary work and 0.35 m/s in other cases. [Royal Decree 486/1997, Annex III, 3 c]

15.3 Does the facility comply with the following requirements pertaining to work environments: *[Royal Decree 486/1997, Annex III, 3 d, 4 and 5]*

- Air is replaced in workplaces at a rate of 30 cubic meters of clean air per hour per worker; and

- In workplaces located outside, and for work that must be conducted outside, measures are implemented to protect the workers from inclement weather?

15.4 If ventilation systems are used at the facility for purposes associated with worker health, does the facility ensure that these systems are maintained in proper operational condition and are equipped with a control system that indicates any damage to the system? *[Royal Decree 486/1997, Annex II, 4]*

Workplace Illumination

15.5 Does the facility comply with the minimum illumination levels noted in the table below? *[Royal Decree 486/1997, Annex IV, 3]*

Notes: The following are minimum illumination levels (units in lux) for workplace zones where tasks with the following lighting demands exist: [Royal Decree 486/1997, Annex IV, 3]

<i>Low visual demands</i>	<i>100</i>
<i>Moderate visual demands</i>	<i>200</i>
<i>High visual demands</i>	<i>500</i>
<i>Extremely high visual demands</i>	<i>1,000</i>
<i>Areas of only occasional use</i>	<i>50</i>
<i>Areas of frequent use</i>	<i>100</i>
<i>Circulation routes of occasional use</i>	<i>25</i>
<i>Circulation routes of frequent use</i>	<i>50</i>

Low, moderate, high and extremely high visual demands, and areas of occasional and frequent use, are not further defined or quantified in Decree 486/1997.

The illumination level of a zone must be measured as follows: [Royal Decree 486/1997, Annex IV, 3]

- *At the height at which a specific task is conducted, for zones with specific tasks;*
- *At a height of 85 cm from the floor, in the case of a general use zone; and*
- *At floor level, for circulation routes.*

15.6 If a failure of illumination could cause a risk to the safety of the workers in any work area (or part of any work area) at the facility, are such work areas and parts equipped with emergency illumination (back up) and means for evacuation? *[Royal Decree 486/1997, Annex IV, 5]*

Requirements for Display Screens

Notes: The following are excluded from requirements in this subsection pertaining to display screens: [Royal Decree 488/1997, Article 1]

- *The driving position of vehicles or machines;*
- *Informational/computer equipment situated on modes of transport;*
- *Informational/computer equipment to be principally used by the public;*
- *Portable systems, as long as they are not used continuously at a work position;*
- *Calculators, registers and all equipment that have small visualization features for data or as a necessary measure for the direct use of the equipment; and*
- *Typewriters of the classical design, know as "ventanilla" (counter) machines.*

The following definitions apply to this subsection: [Royal Decree 488/1997, Article 2]

- *"Display screen" means an alphanumeric or graphic screen, independent of the method of visual representation used;*
- *"Worker" means any worker that habitually and during a relevant part of his/her normal work uses equipment with a display screen; and*
- *"Work station" means that constituting a piece of equipment with a display screen, that is equipped with a keyboard or features for data entry, a program for the person-machine interconnection, ophthalmological accessories, and a seat or table or work table, as well as the immediate work environment.*

15.7 If any equipment with display screens is used at the facility, does the equipment comply with the following requirements: *[Royal Decree 488/1997, Article 3, and Annex,1b]*

- The screen characters are well-defined and configured in a clear form, with sufficient space between the characters and the lines;
- The screen image is stable, without flashing, flickering, or other forms of instability;
- The screen can be easily adjusted for the luminosity and contrast between the characters and the background of the screen;
- The screen is movable and inclinable, and able to be adapted to the needs of the specific user; and
- The screen does not have reflections or reverberations that can bother the user?

15.8 Does the facility ensure that the keyboards for display screen equipment comply with the following requirements: *[Royal Decree 488/1997, Article 3, and Annex, 1c]*

- The keyboard is inclinable and independent of the screen to permit the worker to adopt a comfortable posture that does not cause the arms or hands of any user to tire;
- There is sufficient space in front of the keyboard so that the user can lean his/her arms and hands;
- The surface of the keyboard is dull, in order to avoid reflections; and
- The keyboard symbols stand out sufficiently and are legible from the normal work station?

15.9 Does the facility ensure that work stations for display screen equipment comply with the following requirements: *[Royal Decree 488/1997, Article 3, and Annex, 1d and 1e]*

- The work table or surface has minimal reflection, and has sufficient dimensions for the flexible placement of the screen, keyboard, document and any accessories;
- The document support accessory is stable and adjustable, and is placed in such a manner that uncomfortable movements of the head and eyes are reduced to a minimum;
- The seat is stable, and provides the user with the freedom of movement, allowing for a comfortable posture;
- The height of the seat is adjustable;
- The seat back may be reclined and its height is adjustable; and
- A foot rest is available to any worker who requests one?

15.10 If equipment with display screens is used at the facility, does the relevant work environment comply with the following requirements: *[Royal Decree 488/1997, Article 3]*

- The work station has sufficient dimensions, and it provides sufficient space to permit changes in posture and worker-related movements;
- The conditions of the workplace and the work station are installed so that light sources do not cause a direct glare and do not produce a distracting glare on the screen due to the following:

- The location and technical characteristics of artificial light sources; or
- Other light sources, such as windows, other openings, transparent or translucent partitions, and light colored equipment or partitions;
- Windows are equipped with adequate and adjustable covering, for attenuating the natural light illuminating the work station; and
- Equipment installed in the work station does not produce additional heat that can cause additional discomfort to workers?

15.11 If any equipment with display screens is used at the facility, has the facility conducted a risk evaluation of the affected workers (i.e. effects include vision, physical impact, and mental strain)? *[Royal Decree 488/1997, Article 3]*

15.12 If the results of any risk evaluation of the affected workers indicate the presence or possibility of a health and safety risk, has the facility adopted the technical and organizational measures necessary to eliminate or reduce the risk as much as possible (i.e. reduction of exposure time to display screen)? *[Royal Decree 488/1997, Article 4]*

15.13 If any equipment with display screens is used at the facility, does the facility provide affected workers with the health monitoring in accordance with the following schedule: *[Royal Decree 488/1997, Article 4]*

- Prior to starting any work with display screens;
- Following a period of adjustment at a level of risk determined by the responsible doctor; and
- When disorders occur/emerge that could be caused by this type of work?

15.14 If the results of the health monitoring indicate a need to implement further protective measures, does the facility provide affected workers with the appropriate protective measures (i.e. ophthalmological tests, vision protection, etc.)? *[Royal Decree 488/1997, Article 4]*

Workplace Cleanliness

15.15 Does the facility ensure the prompt removal of any wastes, grease stains, dangerous substances and other substances (i.e. stains, open/accessible containers or reservoirs) that

could cause accidents or contaminate the work environment? *[Royal Decree 486/1997, Annex II, 2]*

Notes: Requirements pertaining to waste disposal are addressed in Section 4.0 of this protocol. Requirements pertaining to chemical management are addressed in Section 16.0 of this protocol.

Room Dimensions and Space

15.16 Does the facility comply with the following requirements relating to work space: *[Royal Decree 486/1997, Annex I, A.1]*

- Work rooms have sufficient surface area, height and air space to allow workers to perform their work without risk to their safety, health or well-being; and
- Room dimensions and spaces at work stations are such that they allow workers sufficient freedom of movement to perform their work?

Notes: If compliance with this requirement is not possible for reasons specific to the workplace, workers must be provided with sufficient freedom of movement near their work stations. [Royal Decree 486/1997, Annex I, A.2]

Rest Areas

15.17 Does the facility comply with the following requirements pertaining to worker rest areas: *[Royal Decree 486/1997, Annex V, A.3]*

- Rest rooms are large enough and equipped with an adequate number of tables and seats (with back supports) for the actual number of workers;
- Pregnant women and nursing mothers are able to lie down to rest in appropriate conditions;
- If working hours are regularly and frequently interrupted and no rest room is available, other rooms are provided where workers can stay during such interruptions, wherever this is required for the safety or health of workers; and
- Appropriate measures are taken for the protection of non-smokers against discomfort caused by tobacco smoke in rest areas?

Drinking Water

15.18 Does the facility meet the following requirements pertaining to drinking water: *[Royal Decree 486/1997, Annex V, A.1]*

- Drinking water is available to workers in sufficient quantities and is easily accessible;
- All circumstances that could possibly contaminate the drinking water are avoided; and
- At all drinking water sources an indication of their potability is provided (as long as doubts may exist regarding potability)?

Changing Facilities

15.19 Does the facility comply with the following requirements relating to changing facilities: *[Royal Decree 486/1997, Annex V, A.2]*

- Appropriate changing rooms are provided for workers if special work clothes are required and where, for reasons of health or propriety, they cannot be expected to change in another room;
- Changing rooms are easily accessible, of sufficient capacity and provided with seating;
- Changing rooms are sufficiently large and have facilities to enable each worker to lock away his/her clothes during working hours;
- If circumstances so require (e.g. dangerous substances, humidity, dirt), lockers for work clothes are separate from those for ordinary clothes;
- Separate changing rooms are provided for men and women;
- If changing rooms are not required, each worker is provided with a place to store his/her clothes;
- Adequate and suitable showers are provided for workers if required by the nature of the work or for health reasons;

- Provisions are made for separate shower rooms or separate use of shower rooms for men and women;
- Showers are equipped with hot and cold running water;
- When the rooms housing the showers or wash basins are separate from the changing rooms, there is easy access between the two; and
- Separate facilities are provided in the vicinity of the work stations, rest rooms, changing rooms and rooms housing showers and wash basins, including lavatories and wash basins?

Personal Protective Equipment (PPE)

Notes: "Personal protective equipment (PPE)" is any equipment intended to be worn or used by workers for protection against any hazards likely to endanger or damage their health and safety and any addition or accessory designed to meet this objective. [Royal Decree 773/1997, Article 2] The Annex to Royal Decree 773/1997 contains a non-exhaustive list of PPE, including a list of activities or sectors could require the use of PPE. Royal Decree 773/1997 (including its annexes referenced throughout this subsection) can be accessed at the Spanish Gazette website indicated at the beginning of this protocol section.

15.20 If risks to worker health and safety cannot be eliminated through other technical or organizational means, or the facility performs activities listed in Annex III of *Royal Decree 773/1997*, does it require the use of PPE in such situations? [*Royal Decree 773/1997, Article 4*]

15.21 If the facility uses PPE, has it performed an assessment of the existing risks and selected the PPE accordingly, ensuring that the selection is appropriate to the needs of the facility? [*Royal Decree 773/1997, Article 5*]

Notes: The facility must consider the non-exhaustive information for evaluating PPE included in Annex IV to Royal Decree 773/1997. The choice of PPE must be reviewed and updated following any modifications at the facility. [Royal Decree 773/1997, Article 6(3)]

15.22 If the facility uses PPE, does it ensure that the equipment meets the following conditions: [*Royal Decree 773/1997, Article 5 and 7.2*]

- Provides adequate protection from the existing hazards without leading to increased risk;

- Is appropriate for the risks and conditions involved;
- Is selected by taking into account the physiological and anatomical characteristics and the state of health of workers;
- Is adjustable to the individual worker;
- In the case of multiple hazards requiring the use of more than one piece of PPE, the equipment is compatible; and
- Is used in circumstances and for lengths of time as determined by the level of risk, the frequency and length of exposure to risk, the workplace conditions, the type of PPE and additional risks derived from the use of PPE?

15.23 Does the facility ensure that the use, storage, maintenance, cleaning, disinfection and repair of PPE used at the facility are performed in accordance with manufacturer's instructions? *[Royal Decree 773/1997, Article 7.1]*

Prohibition of Certain Specified Agents or Work Activities

Notes: The following definitions apply to this subsection as well as to the next two subsections (i.e., those subsections covering the requirements of Royal Decree 374/2001): [Royal Decree 374/2001, Article 2]

- *“Chemical agent” is any element or chemical compound, by itself or in a mixture, in its natural state or that is manufactured, used or spilled, including waste spills, in a work activity, or is produced (intentionally or not) and marketed, or not;*
- *“Hazardous chemical agent” is a chemical agent that represents a risk to the health and safety of workers due to its physio-chemical, chemical or toxicological properties in a form used and found in the workplace; and*
- *“Intermediate products” are substances formed during the chemical reaction and which are transformed and disappear before the end of the reaction or process.*

15.24 Does the facility observe the prohibitions on the production, manufacture and use of the chemical agents listed in the following table? *[Royal Decree 374/2001, Article 8.1 and Annex III]*

EINECS ⁽¹⁾	CAS ⁽²⁾	Name of Agent	Exemption Concentration Limit
202-080-4	91-59-8	2-naphthylamine and its salts	0.1% by weight
202-177-1	92-67-1	4-aminobiphenyl and its salts	0.1% by weight
202-199-1	92-87-5	Benzidine and its salts	0.1% by weight
202-204-7	92-93-3	4-nitrodiphenyl	0.1% by weight
⁽¹⁾ EINECS: European Inventory of Existing Commercial Chemical Substances.			
⁽²⁾ CAS: Chemical Abstracts Service.			

Notes: The prohibition does not apply when the chemical agent is present in another chemical agent or is a component of waste, as long as the concentration is below the level indicated in the last column of the table above. [Royal Decree 374/2001, Article 8.1 and Annex III]

Additionally, the following activities are exempt from the specified prohibition: [Royal Decree 374/2001, Article 8.2]

- *Scientific research and experimentation activities, including analysis;*
- *Processes for which the disposal of these chemical agents in the form of sub-products or waste is expressly their goal; and*
- *Processes, in which prohibited agents appear as intermediate products, and the production of these agents for such a use.*

15.25 If the facility uses any prohibited agents for an exempt activity (as defined in the notes to Question 15.24), does it comply with the following requirements: *[Royal Decree 374/2001, Article 8.3]*

- The appropriate precautions are taken to protect the health and safety of the workers affected and to avoid exposure to the prohibited agents;
- For processes in which prohibited agents appear as intermediate products:
 - The necessary measures are adopted to guarantee the fastest production and use of these substances; and
 - The intermediate products are kept in a closed system, and are only extracted in the minimum quantities necessary for control of the process or maintenance of the system; and

- All information regarding the measures adopted for fulfillment of the above precautionary obligations is submitted to the labor authority, along with data on the following:
 - The reason for the exception;
 - The annual quantities used;
 - The activities and/or reactions or processes employed;
 - The number of exposed workers; and
 - The precautionary measures adopted, in particular, the technical and organizational measures taken in order to avoid exposure of the workers?

Notes: In light of the information received, the labor authority may extend the prohibition when it determines that worker health and safety is not guaranteed. [Royal Decree 374/2001, Article 8.4]

15.26 If the facility uses any prohibited agents for an exempted activity (detailed in this subsection), has it adequately informed the workers of the health and safety hazards related to the agent or activity to which they are, or may be, exposed, as well as the precautions they must take against prohibited agents, including information regarding the following: *[Law 31/1995, Article 18.1] and [Royal Decree 374/2001, Articles 9.1 and 9.2]*

- The results of risk evaluations, and any subsequent modifications to these results, addressing risks to worker health and safety on the job, including risks affecting the company as a whole and those at each workplace or function;
- Information on the hazardous chemical substances used in the workplace, including their names, the health and safety risks involved, their exposure limits and any other legal requirements that apply to them;
- Measures and precautions to be adopted for individual and collective protection, as well as emergency response (including first aid, fire-fighting and worker evacuation); and
- Access to all technical data provided by the supplier (such as Material Safety Data Sheets (MSDS)), which conform to norms on the classification, packaging, and labeling of such chemical substances and preparations?

Notes: If the facility has worker representatives, the information may be conveyed through these representatives (worker representatives are further addressed in Section 10.0 of this protocol). [Law 31/1995, Article 18.1]

All information must be updated and provided in either written or verbal form, depending on the volume, complexity and frequency of use, as well as the nature and level of the risk involved. [Royal Decree 374/2001, Article 9.3]

Evaluation of Chemical Exposure Risks

15.27 If the facility has hazardous chemical agents in the workplace, does it conduct a health and safety risk assessment (see the Subsection in Section 10.0 of this protocol entitled, "Occupational Risk Assessment") that includes an analysis of the following: *[Royal Decree 374/2001, Article 3.1]*

- The hazardous properties of the agent, including information such as MSDS to evaluate their risks;
- Environmental and biological threshold limit values;
- The quantities of such agents that are used or stored;
- The type, level and duration of worker exposure to such agents and any other factor that may effect the magnitude of the exposure risk, as well as accidental exposure;
- The effect of preventive methods that have been or must be adopted; and
- Conclusions from worker health surveillance that may have been conducted and any accidents or incidents (potential or actual) that may be caused by the presence of such agents?

Notes: The risk evaluation must include activities such as maintenance and repair activities that have the potential to significantly expose the worker to hazardous chemical agents, regardless of the technical methods or precautions that are taken. [Royal Decree 374/2001, Article 3.2]

When activities involve exposure to several hazardous chemical agents, the evaluation must be conducted to include the risks presented by a combination of such agents. [Royal Decree 374/2001, Article 3.6]

The risk evaluation must be updated and documented as described in Section 10.0 of this protocol. [Royal Decree 374/2001, Articles 3.7 and 3.9]

15.28 Does the facility ensure that the requirements detailed in Question 15.32 and the Subsection entitled, “Medical Surveillance” (Royal Decree 374/2001, Articles 5 and 6) are met, if an exceedance of either of the following occur: [Royal Decree 374/2001, Article 3.4 and Annex 1]

- A daily exposure to more than 0.15 mg/m³ of inorganic lead and its derivatives (in air at 20 degrees centigrade and 101.3 Kpa); and/or
- The environmental limit values (VLAs) listed in the “Document on Occupational Exposure Limits for Chemical Agents” published by the National Institute for Health and Safety at Work (Instituto Nacional de Seguridad e Higiene en el Trabajo, INSHT) with a recommendation for application by the National Occupational Health and Safety Commission?

Notes: The 2009 edition of the “Document on Occupational Exposure Limits for Chemical Agents” (“Documento Sobre Límites de Exposición Profesional Para Agentes Químicos en España”) is available in Spanish on the INSHT website (last accessed in October 2009) at: http://www.insht.es/InshtWeb/Contenidos/Documentacion/TextosOnline/Valores_Limite/LE_P2009%20.pdf

Alternative criteria or limits to those listed in this document may be used if it can be demonstrated that they are sufficient for the protection of worker health and safety. [Royal Decree 374/2001, Article 3.4b]

15.29 If risks are present due to the inhalation of hazardous chemical agents, does the risk assessment (see Question 15.27) include the sampling of the concentrations of such agents in the air within the workplace breathing zone? [Royal Decree 374/2001, Article 3.5]

Notes: The value obtained must be compared with the values indicated in Question 15.28. The procedure for sampling must be adapted to the nature of the limit value used for comparison. The sampling procedure (the number of samples, their duration and time taken) and method (including sampling equipment) should be as established in the relevant norm, or in absence of this, relevant norms as per one of the following: [Royal Decree 39/1997, Article 5.3 and Royal Decree 374/2001, Article 3.5]

- UNE Norms;
- Published Guidance documents from:
 - The Institute of Occupational Health and Safety;
 - The National Institute of Silicosis;

- The Ministry of Health and Consumption; or
- Competent Institutions from autonomous communities; or
- International Norms.

In the absence of the above sources, guides may be used when published by entities that have received prestigious recognition in the material covered or are recognized by another established professional criteria that provide an equivalent level of confidence in the published material. [Royal Decree 39/1997, Article 5.3]

The term “prestigious recognition” is not defined in Royal Decree 39/1997.

The sampling indicated in this question is not necessary when the facility can clearly demonstrate by other evaluative means that it has achieved adequate levels of prevention and protection in accordance with the risk evaluation provisions in the norms indicated in the previous note. [Royal Decree 374/2001, Article 3.5]

15.30 If a new activity is introduced at the facility that uses hazardous chemical substances, does it ensure that the activity is evaluated for risks, and that appropriate preventative methods are in place prior to beginning such an activity? *[Royal Decree 374/2001, Article 3.8]*

15.31 Does the facility ensure health and safety protection of its workers against the risks of using hazardous chemical agents, by eliminating or reducing such risks with the following methods: *[Royal Decree 374/2001, Article 4]*

- The organization and planning of workplace systems;
- The selection and installation of equipment;
- The establishment of adequate equipment maintenance procedures for equipment using such agents or their wastes, as well as procedures for the handling, storage and transfer of these agents;
- The adoption of adequate hygienic methods, including personal, as well as organizational and sanitary;
- The reduction of the amount of such agents that are present in the workplace to levels that are the minimum necessary for the type of work done;
- The reduction of the number of workers exposed to such agents, or that may be exposed, to a minimum; and

- The reduction, of the duration and intensity of exposure to such agents, to a minimum?

15.32 Does the facility ensure that if a risk from exposure to hazardous chemical agents is indicated by the assessment indicated in Question 15.27, it implements the following preventative and protective measures: [Royal Decree 374/2001, Article 5]

- The elimination and reduction of such agents to a minimum, preferably by the substitution of such agents with other chemical processes that, along with different conditions for use, are not hazardous or are less hazardous; or
- If the nature of the activity does not allow the elimination of risk by substitution, the risk is avoided or reduced to a minimum by applying the following methods (prioritized in the order presented):
 - The use of work procedures, technical controls, equipment and materials that permit the isolation of the agent to the extent possible to avoid and reduce spills, emissions and direct contact with workers;
 - The use of ventilation or other collective protective measures and adequate organizational measures, preferably in the location where the risk originates; and
 - Use of personal protective equipment (see Subsection entitled, “Personal Protective Equipment (PPE)”) when the methods above are insufficient and exposure to, or contact with the agent are unavoidable?

Notes: However, if only a minor risk to worker health and safety exists due to hazardous chemical agents (so that the risk is sufficiently reduced by the application of measures described in Question 15.31 (Article 4), then the requirements detailed in this question and the Subsection entitled, “Medical Surveillance” (Royal Decree 374/2001, Articles 5 and 6) are not necessary. [Royal Decree 374/2001, Article 3.3]

The term “sufficiently reduced” is not defined in Royal Decree 374/2001.

Medical Surveillance

Notes: Medical surveillance may only be undertaken with the consent of workers concerned or when specifically required by law and the results of all monitoring must remain confidential. Access to medical information is to be restricted to the concerned worker, medical personnel and health

authorities. See Section 10.0, of this protocol for specific details on documentation and notification requirements. [Law 31/1995, Article 22] and [Royal Decree 374/2001, Article 6.6]

15.33 If the facility determines that there is a risk to the health of workers due to a hazardous chemical evaluation (as detailed in the Subsection entitled, "Evaluation of Chemical Exposure Risks"), does it conduct periodic monitoring of the health status of workers as follows: [Royal Decree 39/1997, Article 37.3.3] and [Royal Decree 374/2001, Article 6.1]

- An initial health examination is performed whenever specific tasks with health risks are newly assigned or incorporated into workplace activities;
- A health examination is performed whenever a worker returns after a prolonged absence due to health problems, to determine if they have an occupational cause, and to recommend appropriate protective measures; and
- Worker health surveillance is conducted at regular periodic intervals?

Notes: The health surveillance must be performed according to specific protocols or other existing means with respect to the risk factors to which the worker is exposed. The Ministry of Health, in consultation with competent scientific societies and in agreement with the materials established in the General Health Law, will determine the frequency of the surveillance and the specifics of the surveillance for each case. [Royal Decree 39/1997, Article 37.3.3c]

However, all health examinations must include the following: [Royal Decree 39/1997, Article 37.3.3c]

- *A clinical-occupational history;*
- *Medical case history data;*
- *Clinical exam;*
- *Biological monitoring and complementary studies according to the inherent occupational risks;*
- *A detailed description of the work post/position including the amount of time the worker has been in that position, the risks detected in the analysis of the work conditions and the preventative methods that have been adopted; and*
- *A description of previous work posts/positions, including the risks that were present, and the time spent in each post/position.*

Health surveillance must be performed by health personnel who are technically competent and trained and accredited in accordance with current standards and as detailed in the notes below. [Royal Decree 39/1997, Article 37.3 - 37.3a]

Prevention service departments (see the Subsection entitled, "Prevention Services" in Section 10.0 of this protocol) that develop occupational health surveillance and monitoring programs must use a doctor who is a specialist in Occupational Medicine or has a diploma in Corporate Medicine and a corporate ATS/DUE ("diplomado en Medicina de Empresa y un ATS/DUE de empresa" – the acronym "ATS/DUE" is not defined). This does not preclude the use of other health professionals with accredited technical competence, training and capabilities. [Royal Decree 39/1997, Article 37.3 - 37.3a]

For more information on the requirements for the accreditation of health professionals see Royal Decree 39/1997 and its amendments (Order of 27 June 1997, Royal Decree 780/1998 and Royal Decree 604/2006) by searching on the Legal Notices Legislative Database ("Noticias Jurídicas - Base de Datos de Legislacion") website (last accessed in November 2009) at: http://noticias.Juridicas.com/base_datos/

If the nature of the inherent risks involved in the work performed makes it necessary, the worker's right to undergo periodic medical examinations after the termination of the workplace relationship is continued through the National Health System. [Royal Decree 39/1997, Article 37.3.3e]

15.34 Does the facility also provide health surveillance examinations for workers under the following conditions: [Royal Decree 374/2001, Article 6.2]

- If the relationship between the worker's exposure to a hazardous chemical agent (as defined in the note in the Subsection entitled, "Prohibition of Certain Specified Agents or Work Activities") and a specific illness or health problem can be established;
- If the probability exists that an illness or health problem may be caused by the actual work conditions in which the worker performs his or her job; and
- If investigative techniques exist that can reliably detect the symptoms of such an illness or health problem that involve little risk to the worker?

Notes: Biological monitoring must be included as part of the health surveillance examinations performed under these conditions. [Royal Decree 374/2001, Article 6.3b, para. 2]

15.35 If the facility has workers that work with hazardous chemical agents, does it ensure that health surveillance examinations are provided under the following conditions: [Royal Decree 374/2001, Article 6.3 and Annex II b]

- Whenever established in a legal obligation/instrument;
- Whenever such a surveillance is indispensable to evaluate the effect that work conditions have on a worker's health, as follows:
 - It cannot guarantee that the worker's exposure to such agents will be sufficiently controlled;
 - Factors such as the worker's personal characteristics, state of health, and any disability (if one exists) that, due to the nature of such an agent, might create an increased sensitivity to that agent; and
- Whenever an exposure to lead in air reaches 75 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), for eight hours a day, forty hours a week or a blood sample indicates a lead concentration higher than of 40 μg Pb/100ml?

Notes: The biological exposure limit for lead in the bloodstream is 70 μg Pb/100ml of blood. [Royal Decree 374/2001, Annex II a]

15.36 Does the facility ensure that worker's are informed when health surveillance examinations (under the conditions listed in 15.35) are required, prior to assigning the worker to the task that involves a risk of exposure to the chemical agent in question? *[Royal Decree 374/2001, Article 6.4]*

15.37 If a health examination indicates one of the following results, does the facility doctor or other competent health professional personally inform the worker of the results: *[Royal Decree 374/2001, Article 6.7]*

- The worker has an identifiable illness, or shows evidence of the harmful effects (in the health professional's opinion) of exposure to a harmful chemical substance; or
- A blood test result indicates an exceedance of the biological exposure limit for lead in the bloodstream of 70 μg Pb/100ml?

Notes: The health professional must also consult with the worker regarding continued health surveillance after the exposure period has ended, as indicated in the last paragraph in the notes to Question 15.33. [Royal Decree 374/2001, Article 6.7]

15.38 If the results indicated in Question 15.37 occur, does the facility take the following steps: *[Royal Decree 374/2001, Article 6.8]*

- Review its risk assessment;
- Review the preventative methods used to eliminate or reduce risks;
- Apply any additional methods necessary to eliminate or reduce risks, including the reassignment of the worker to a position where the potential risk of a new exposure does not exist;
- Continue the health surveillance of the affected workers; and
- Perform health surveillance examinations on workers who may have suffered similar exposure(s)?

Notes: The facility doctor's recommendations must be taken into account regarding new preventative methods and new health surveillance examinations. [Royal Decree 374/2001, Article 6.8]

15.39 In other cases, do health service personnel analyze the results of its medical surveillance examinations as follows: *[Royal Decree 39/1997, Article 37.3.3f]*

- To investigate and analyze the possible relationships between the exposure to occupational risks and any health problems; and
- To develop proposals for methods to improve workplace conditions and environments?

Notes: This analysis must be done using epidemiological criteria and in conjunction with the other components of the prevention services department. [Royal Decree 39/1997, Article 37.3.3f]

Exposure to Carcinogens and Mutagens

Notes: The terms "carcinogen" and "mutagen" refer to any of the following: [Royal Decree 665/1997, Article 2, as amended, and Annex I]

- A substance that complies with the criteria for classification as a carcinogen of 1st or 2nd category, or mutagen of the 1st or 2nd category, established in the regulations relating to notification of new substances and the classification, packaging/containerizing, and labeling of hazardous substances (Royal Decree 363/1995), as set forth in Chapter 4 of Appendix 15-B;
- A preparation or substance that contains any of the substances mentioned in the preceding bullet that comply with the criteria for their classification as a carcinogen or mutagen,

established in the regulation relating to the classification, packaging/containerizing, and labeling of hazardous substances and preparations (Royal Decree 363/1995), as set forth in Chapter 4 of Appendix 15-B; and

- *Any substance, preparation or procedure mentioned in Annex I in Appendix 15-B, as well as any substance or preparation that is produced during one of the procedures mentioned in Annex I in Appendix 15-B.*

The term limit value, except if specifically indicated to the contrary, means the limit of the temporary weighted average of the concentration of a carcinogenic or mutagenic agent in the air inside of the zone in which the worker breaths, and in relation to a specific reference period, as set forth in Annex III of Appendix 15-B. [Royal Decree 665/1997, Article 2.3, as amended]

- 15.40** If any activity is likely to involve a risk of exposure to carcinogens or mutagens, has the facility assessed the risk to the workers' health or safety and determined the nature, degree and duration of any such exposure? *[Royal Decree 665/1997, Article 3, as amended]*

Notes: This assessment must be performed regularly and in any event when any change occurs in the conditions which may affect workers' exposure to carcinogens. The facility must maintain documentation pertaining to the risk assessment which includes the results of the assessment, the criteria and processes used, and the measurements, analyses and tests performed. [Royal Decree 665/1997, Article 9.1]

- 15.41** If the assessment reveals a risk to workers' health or safety, does the facility initiate efforts to prevent the exposure or, where that cannot be accomplished, to reduce the level of exposure of workers to as low a level as is technically possible? *[Royal Decree 665/1997, Article 4 and 5]*

- 15.42** If the assessment reveals a risk to workers' health or safety, does the facility take appropriate measures to ensure the following: *[Royal Decree 665/1997, Article 6]*

- Workers do not eat, drink or smoke in working areas where there is a risk of contamination by carcinogens or mutagens;
- Workers are provided with appropriate protective clothing or other appropriate special clothing;
- Separate storage places are provided for working or protective clothing and for street clothes;
- Protective equipment is properly stored in a well-defined place;

- PPE is checked and cleaned, if possible, before, and in any case, after, each use;
- Defective equipment is repaired or replaced before further use; and
- Workers are provided with appropriate and adequate washing, toilet and eating facilities (workers must be allowed a minimum of ten minutes before eating and before leaving the facility to clean-up)?

Notes: It is strictly prohibited for workers to carry their work clothing to their homes for washing. If the facility contracts the cleaning of personal protective equipment to a specialized laundry facility, it must place clothing in closed containers labeled with warnings. [Royal Decree 665/1997, Article 6(3)]

- 15.43** If the assessment reveals a risk to workers' health or safety, does the facility maintain an up-to-date list of persons so affected, including the exposure to which each has been subjected? [Royal Decree 665/1997, Article 9] **<RECORD KEEPING>**

Notes: This list must be maintained for at least 40 years following the end of exposure. [Royal Decree 665/1997, Article 9.3]

- 15.44** If any carcinogen or mutagen is used, does the facility apply the measures described below: [Royal Decree 665/1997, Article 5, as amended]

- Limitation on the quantities of carcinogens and mutagens at the place of work;
- Minimize the number of workers exposed or likely to be exposed;
- Design of work processes and engineering control measures so as to avoid and minimize the release of carcinogens or mutagens into the place of work to the lowest technically possible level;
- The exposure does not exceed the limit values for carcinogens and/or mutagens set forth in Appendix 15-B (Annex III);
- Evacuation of carcinogens and mutagens at their source, using local extraction system or general ventilation, are appropriate and compatible with the need to protect public health and the environment;

- Use of existing appropriate procedures for the measurement of carcinogens and mutagens, in particular for the early detection of abnormal exposures resulting from an unforeseeable event or an accident;
- Application of suitable working procedures and methods;
- Provision of collective protection measures and/or, where exposure cannot be avoided by other means, individual protection measures;
- Provision of hygiene measures, in particular regular cleaning of floors, walls and other surfaces;
- Provision of information for workers;
- Demarcation of risk areas and use of adequate warning and safety signs including "No Smoking" signs in areas where workers are exposed or likely to be exposed to carcinogens or mutagens;
- Drafting of plans to deal with emergencies likely to result in abnormally high exposure;
- Provision of means for safe storage, handling and transportation, in particular by using sealed and clearly and visibly labeled containers; and
- Provision of means for safe collection, storage and disposal of waste by workers, including the use of sealed and clearly and visibly labeled containers?

Notes: Compliance with exposure limits does not release the facility from the design requirements in the third bullet of this question. [Royal Decree 665/1997, Article 5, as amended]

- 15.45** If the assessment reveals a risk to workers' health or safety, does the facility ensure that each affected worker is subject to appropriate health surveillance (including pre-employment examination, periodic reviews thereafter, and reviews whenever the state of health so requires)? *[Royal Decree 665/1997, Article 8]*

Notes: Health monitoring of workers must be carried out in accordance with the principles and practices of occupational medicine; it must include at least the following measures: [Royal Decree 665/1997, Annex II] <RECORD KEEPING>

- *Keeping records of a worker's medical and occupational history;*
- *a personal interview; and*

- *Where appropriate, biological monitoring, as well as detection of early and reversible effects.*

Further tests may be conducted for each worker in light of the most recent occupational medical information available, whenever work conditions change or if safety measures are insufficient to guarantee worker health and safety. Workers are entitled to all information resulting from individual medical tests. [Royal Decree 665/1997, Article 8]

Health surveillance records must be maintained for at least 40 years after the exposure. [Royal Decree 665/1997, Article 9.3] <RECORD KEEPING>

- 15.46** If an unforeseeable event or an accident takes place, which results in an abnormal exposure of workers to carcinogens or mutagens, does the facility inform the affected workers of this exposure? *[Royal Decree 665/1997, Article 8.5]*

Notes: Abnormal exposure is not defined in this decree, but is presumed to mean an exposure at levels above the limits indicated in Appendix 15-B, Annex III.

- 15.47** If an unforeseeable event or an accident takes place which results in an abnormal exposure of workers to carcinogens or mutagens, does the facility initiate the following actions until the situation is restored back to normal and the causes of the abnormal exposure are eliminated: *[Royal Decree 665/1997, Article 7.1]*

- Only those workers who are essential to carrying out repairs and other necessary work are permitted to work in the affected area;
- The workers concerned are provided with protective clothing and individual respiratory protection equipment, which they must wear; the exposure is kept to the strict minimum duration necessary for each worker; and
- Unprotected workers are not allowed to work in the affected area?

- 15.48** If a foreseeable event such as maintenance takes place where the potential for a significant increase in exposure of workers to carcinogens or mutagens exists, does the facility initiate the following actions: *[Royal Decree 665/1997, Article 7.2]*

- Avoid worker exposure by reducing the amount of time a worker spends in the affected workplace;

- Adopt additional safety measures, including the provision of protective clothing and individual respiratory protection equipment to the concerned workers and which they are required to wear; and
- Prohibit entry into the affected work area by unprotected workers?

15.49 If carcinogens or mutagens are used in the workplace, does the facility ensure that the following information is available to be furnished to health and labor authorities upon their request: [Royal Decree 665/1997, Article 10] **<RECORD KEEPING>**

- The result of the risk assessment, including the nature, degree and duration of exposure, and the assessment criteria and methods used;
- The activities and industrial processes involving carcinogenic or mutagens agents, including a justification for the use of carcinogenic agents in these activities and processes;
- The number of exposed workers, and the updated list of workers (specified above);
- The preventive measures adopted and the type of protective equipment used;
- The criteria used for and result of any substitution of carcinogenic or mutagens agents; and
- Any case of worker cancer resulting from workplace exposure?

Notes: According to in-country legal experts, there is no specific submittal documentation that must be made available, nor is there any time limit by which this information is to be made available.

Exposure to Biological Agents

Notes: The following definitions apply to requirements in this subsection: [Royal Decree 664/1997, Article 2]

- “Biological agents” are microorganisms, including those genetically modified, cell cultures and human endoparasites, capable of causing any type of infection, allergy or toxicity;
- “Cell culture” is caused by the result of in-vitro growth of a cell obtained from multi-cellular organisms; and
- “Microorganisms” are all microbiological entities (both cellular and non-cellular), capable of reproducing or transferring genetic material.

Biological agents are classified by the risk of infection they pose, as follows: [Royal Decree 664/1997, Article 3 and Annex II, as amended]

- Group 1 biological agent is that which has a low probability of causing a disease for humans;*
- Group 2 biological agent is that which can cause illness in humans and can present a danger to the workers, but which has a low probability of affecting the work collective, and for which preventive measures and efficient treatment is available;*
- Group 3 biological agent is that which can cause a severe illness to humans and represents a serious danger for workers, with a risk of affecting the work collective, but for which preventive measures and efficient treatment is available;*
- Group 4 biological agent is that which can cause a severe illness to humans and represents a serious danger for workers, with the risk of affecting the work collective, and which has a high probability of affecting the work collective, and for which preventive measures and effective treatments are not available. Annex II of Royal Decree 664/1997 classifies Group 2, 3 and 4 biological agents. Biological agents are listed by separate categories, including the following: bacteria and affines, viruses, parasites and fungi.*

Royal Decree 664/1997, which lists and classifies biological agents, is further amended by Order of 25 March 1998. Both Royal Decree 664/1997 (including its annexes referenced throughout this subsection) and Order of 25 March 1998 can be accessed at the Spanish Gazette website indicated at the beginning of this protocol section.

For certain biological agents listed in Annex II of Royal Decree 664/1997, additional indications are specified, in accordance with the following abbreviations: [Royal Decree 664/1997, Annex II, Article 1]

- “A” means possible allergic effects;*
- “D” means the requirement for the list of workers exposed to biological agents to be kept for at least 10 years following the last exposure;*
- “T” means production of toxins;*
- “V” means: effective vaccine available;*
- “(*)” means normally not infectious in the air; and*
- “spp” means other specific characteristics, in addition to those specified above, can present a risk to health.*

The classification of the listed agents was conducted with consideration of the possible effects on healthy workers. The possible effects on workers whose sensitivity is affected by such causes as previous pathology, medication, immune disorder, pregnancy or lactation, have not been taken into account. [Royal Decree 664/1997, Annex II, Article 2]

For the correct classification of the biological agents, the following must be kept in mind: [Royal Decree 664/1997, Annex II, Article 3]

- *The absence of a specific agent from the listing in Annex II of Royal Decree 664/1997 does not signify its implicit and automatic classification as a Group 1 biological agent;*
- *The listing does not include genetically-modified microorganisms, for which a separate regulation exists;*
- *For biological agents where only the genus is indicated, the species and strains that are not pathogenic for human beings are considered to be excluded; and*
- *All the viruses not included in the list, that have been isolated in human beings, are considered classified (at a minimum) as Group 2, except in cases when the sanitary authority has estimated that it is unnecessary.*

When a strain is attenuated or it has lost any well known virulent genes, the containment measures, required in accordance with the classification designated for its mother strains, will not necessarily be applicable; for example, when a strain is to be used as a product or part of a product for prophylactic or therapeutic purposes. [Royal Decree 664/1997, Annex II, Article 4]

Any biological agents that are not normally infectious through the air, and marked with an "()" in the list of biological agents, may be exempt from some containment measures used to avoid their transmission by air, except when the sanitary authority requires the provision of information prior to such a exemption. [Royal Decree 664/1997, Annex II, Article 5]*

The requirements relating to the containment of biological agents, derived from the classification of the parasites, only applies to the distinct stages of the parasitic cycle that can be infectious for persons in the workplace. [Royal Decree 664/1997, Annex II, Article 6]

15.50 *If any biological agents are used at the facility, has the facility conducted an evaluation of any workers affected by such exposure? [Royal Decree 664/1997, Article 4]*

Notes: This evaluation must determine the nature, degree and duration of the exposure to the workers. This evaluation must be repeated periodically (not further defined), as well as any time a change in conditions occurs that could affect the exposure of workers to biological agents, or in any case when an infection or illness detected for any worker is suspected of being caused by an exposure to any biological agent at the facility. [Royal Decree 664/1997, Article 4]

If the results of the evaluation indicate that the exposure, or potential exposure, refers to a Group 1 biological agent that does not present a known risk to the health of any worker, no further action is required. [Royal Decree 664/1997, Article 4(4)]

15.51 *If the results of the evaluation indicate a risk to the health and safety of any workers caused by an exposure to biological agents (Group 2, 3 and 4 specified in Annex II of Royal Decree 664/1997), are the following requirements met: [Royal Decree 664/1997, Article 6]*

- The exposure is avoided; and
- If the elimination of the exposure is not possible, due to technical reasons, the risk of exposure is reduced to the lowest possible level, which sufficiently guarantees the health and safety of the affected workers?

Notes: No definition is provided in Royal Decree 664/1997 for the expression "guaranteeing the health and safety of the affected workers".

15.52 If a health and safety risk exists at the facility, as a consequence of work with biological agents, does the facility adopt measures that provide the following: *[Royal Decree 664/1997, Article 7]*

- Prohibit workers from eating, drinking or smoking in the work zones where said risk exists;
- Provide workers with appropriate protective garments, or other types of specialized, adequate garments;
- Provide toilets, as well as appropriate and adequate bathrooms that are equipped with ocular cleaning products and dermal antiseptics;
- Provide a specific location for the adequate storage of protective equipment, and ensure it is clean and in good working condition, prior to use (if possible) as well as after use;
- Provide specified procedures for retrieving, handling and processing biological agent samples;
- Provide workers with ten minutes for personal hygiene, both prior to eating and after completing such work;
- Ensure that upon exiting the relevant work zone all workers remove work clothes and personal protective equipment that could be contaminated by biological agents, and that these clothes and equipment are stored in areas separate from any other garments; and
- Prohibit workers from taking used work garments home, and ensure that any such garments are sent out of the facility (for disposal) in closed receptacles with affixed labels specifying appropriate warnings (see Annex III of *Royal Decree 664/1997*)?

15.53 If any workers at the facility are subject to the risk from biological agents, are these workers provided with medical monitoring that is adequate for, and specific to, the risk from biological agents, and in accordance with the following schedule: [Royal Decree 664/1997, Article 8]

- Prior to any exposure;
- At regular, successive intervals, with the schedule specified by the relevant Doctor (consideration must be given to the specific biological agent in question, the type of exposure, and the available effective tests for providing early detection); and
- If any worker subject to the specified exposure has contracted an infection or illness that could be caused by the exposure to biological agents?

Notes: If effective vaccines exist for an exposure to a risk to biological agents, they must be made available to any affected workers, including information on the advantages and inconveniences caused by such vaccination. The offer of such vaccinations to any worker, and their acceptance, must be in writing. [Royal Decree 664/1997, Article 8(3)]

15.54 Does the facility ensure that the following documentation is kept at the facility in an updated form: [Royal Decree 664/1997, Article 9] **<RECORD KEEPING>**

- Risk evaluation results, as well as the criteria and procedures for the evaluation and the methods used for monitoring, analysis and testing;
- A listing of the names of the workers exposed to any Group 3 and Group 4 biological agents, indicating the type of work conducted and the biological agents the workers were exposed to, as well as a register of the corresponding exposures, accidents and incidents; and
- Medical history of any worker subject to medical monitoring (as specified above in Question 15.53)?

*Notes: This documentation must be kept at the facility for at least 10 years after the last exposure. [Royal Decree 664/1997, Article 9(3)] **<RECORD KEEPING>***

15.55 Does the facility notify the labor authority at least 30 days prior to conducting work with Group 2, 3 or 4 biological agents? [Royal Decree 664/1997, Article 10]

Notes: This notification must include the following: [Royal Decree 664/1997, Article 10(3)]

- *Name and address of the facility;*
- *Name and training of the person(s) at the facility responsible for prevention of exposure to biological agents;*
- *The results of the risk evaluation;*
- *The type of biological agent; and*
- *The planned prevention and protective measures.*

15.56 Does the facility provide the following to the labor and the sanitation authorities: *[Royal Decree 664/1997, Article 11]*

- Information pertaining to any accident or incident that caused a release of any biological agent and that can cause a severe infection or illness to humans;
- Information pertaining to all cases of illness and death caused by an exposure to biological agents;
- If the facility has ceased all activities related to the exposure to biological agents, copies of the following:
 - The listing of the names of the workers exposed to any Group 3 or 4 biological agents, indicating the type of work conducted and the biological agents relating to the exposure; and
 - The medical history of any worker subject to medical monitoring (as specified above)?

Exposure to Legionella

Notes: This subsection applies to the following: [Royal Decree 865/2003, Article 2.1]

- *Facilities that use water during operations and produce aerosols/mists that may be found in the interior or exterior of its buildings that are collectively used; and*
- *Industrial installations or means of transport that are susceptible to becoming a source for the propagation of Legionella disease during operation, service tests or maintenance.*

In particular, these requirements apply to facilities and equipment that are identified and classified as follows: [Royal Decree 865/2003, Articles 2.1 and 2.2]

- *Facilities with a high probability of proliferating and dispersing Legionella, including:*
 - *Cooling towers and evaporative condensers;*
 - *Sanitary hot water systems with an accumulator and return circuit;*

- Water conditioning systems with constant agitation and recirculation via high velocity jets/water streams or the injection of air (spas, jacuzzis, pools, therapeutic basins or baths, hydro-massaging bath tubs, and treatment with water jets under pressure);
- Facilities with a minor probability of proliferating and dispersing *Legionella*:
 - Interior cold water systems for human consumption (piping, reservoirs, tanks), cisterns or mobile reservoirs, and sanitary hot water systems without return circuits;
 - Humidifiers;
 - Ornamental fountains;
 - Sprinkler irrigation systems in an urban environment;
 - Fire prevention systems;
 - Cooling elements by aerosol dispersion into open air; and
 - Other apparatuses that accumulate water and may produce aerosols (mist).

Respiratory therapy Installations associated with the risk of proliferating and dispersing Legionella are a specified category, but are beyond the scope of this protocol. [Royal Decree 865/2003, Article 2.2.3]

The requirements of this subsection do not apply to exclusively residential buildings, except those that may affect the environment around such buildings. [Royal Decree 865/2003, Article 2.3]

Royal Decree 865/2003 (including its annexes, as referenced throughout this subsection) can be accessed at the Spanish Gazette website indicated at the beginning of this protocol section.

15.57 If the facility has any cooling towers or evaporative condensers, does it notify the competent health administration within a month of beginning operations and include the following details in the notification: *[Royal Decree 865/2003, Article 3]*

- The number of installations and their specific locations;
- Their technical characteristics (model, series number, year installed, ventilator voltage);
- Water supply; and
- Any modifications that may affect the system?

Notes: Notification must be done using the form found in Annex 1 of the Royal Decree 865/2003. Notification must also be made when such facilities cease operation. [Royal Decree 865/2003, Article 3]

15.58 If the facility has any of the systems or installations listed in the note at the beginning of the subsection, does it have a periodic maintenance program, and does it complete structural and operational improvements that guarantee public health regarding the following: *[Royal Decree 865/2003, Article 4]*

- Proper operation of the systems and installations; and
- The microbiological and physio-chemical quality of the water?

Notes: The facility retains responsibility even if these activities are subcontracted. [Royal Decree 865/2003, Article 4]

General methods for maintaining sanitary conditions and preventing Legionella include: [Royal Decree 865/2003, Article 6]

- *The elimination and reduction of dirty areas by means of good design and maintenance; and*
- *The avoidance of conditions that favor the survival and multiplication of Legionella by means of water temperature control and continuous disinfection.*

Specific details on the required preventative methods and maintenance programs are included in Articles 6 – 8, 13 and Annexes 3 - 6 of the Royal Decree 865/2003.

Facilities had until 19 July 2004 to comply with the methods described in Article 7 for existing cooling towers, evaporative condensers and interior installations for water for human consumption. [Royal Decree 865/2003, Sole Transitional Provision]

15.59 Does the facility ensure that records are kept of all maintenance operations on any systems or installations listed in the notes at the beginning of the subsection, including the following: *[Royal Decree 865/2003, Article 5]* **<RECORD KEEPING>**

- Dates of improvement, cleaning and general disinfection tasks, details on the type of protocol followed, products used, dosages, actuation/reaction times;
- If these maintenance operations are conducted by a contracted/external business or service provider, the contractor's corresponding cleaning and disinfection certification (using the form found in Annex 2 of the *Royal Decree 865/2003*);
- Dates of any other type of maintenance (partial cleaning, repairs, verifications, greasing) and their specifications, as well as any incidents or methods adopted;

- Dates and results of any analytical results for different water analyses; and
- The signature of the technician responsible for the tasks performed, and of the person responsible for the facility?

Notes: These records must be kept available for the health authorities responsible for facility inspections. [Royal Decree 865/2003, Article 5] <RECORD KEEPING>

There is no specific length of time specified in Royal Decree 865/2003 for the retention of these records.

15.60 Does the facility ensure that the health authorities are provided access in order to inspect its classified systems and installations (see the note at the beginning of the subsection) and to review their related maintenance programs and records? *[Royal Decree 865/2003, Article 10]*

15.61 If the health authorities determine that actions must be taken (such as cleaning, disinfection and/or structural changes) to reduce the risk of Legionella, does the facility ensure that it complies with such actions? *[Royal Decree 865/2003, Article 12]*

Notes: If the health authorities determine that there is a risk to public health, a temporary or permanent closure of the facility may be ordered. [Royal Decree 865/2003, Article 10]

Exposure to Occupational Noise

15.62 Has the facility conducted a noise evaluation of workers to determine if noise limits have been exceeded (as noted below)? *[Royal Decree 286/2006, Article 6]*

Notes: The noise evaluation must consist of the following components: [Royal Decree 286/2006, Article 6]

- *An evaluation of existing workplaces;*
- *Additional evaluations of any newly-created work position, or of any existing position that is affected by modifications that could cause a significant variation in the noise exposure for any workers; and*
- *Periodic evaluation conducted annually (as a minimum) in any workplaces where the daily equivalent level or the peak level exceeds 85 dBA or 137 dBA, respectively; or every three years if in areas where these limits are not exceeded but the daily equivalent level or the peak level exceeds 80 dBA or 135 dBA, respectively.*

This evaluation must include noise monitoring, conducted in accordance with the criteria set forth in Appendix 15-C. When the noise characteristics of the evaluated workplace vary significantly from one shift to another, the weekly equivalent level (defined in Annex 1 of Appendix 15-C) can be used in place of the daily equivalent level, as long as such substitution has been justified and documented in the facility's Occupational Risk Assessment (see the Subsection entitled, "Occupational Risk Assessment" in Section 10.0 of this protocol). However, workplaces where a certified professional confirms/declares that the daily equivalent level or the peak level is consistently less than 80 dBA and 135 dBA, respectively, are exempt from these monitoring requirements. [Royal Decree 286/2006, Article 6.4]

15.63 Does the facility provide the following to the members of the in-house health and safety personnel and to any worker representatives: *[Royal Decree 286/2006, Article 10]*

- Permission to be present when any noise evaluation is conducted;
- Information pertaining to the results of any noise evaluation and permission to obtain any clarifications necessary for understanding the significance of the results; and
- Information pertaining to preventive measures to be adopted, based on the results of the evaluation?

15.64 If the noise evaluation indicates that the daily equivalent level of a workplace exceeds 80 dBA, has the facility adopted the following measures: *[Royal Decree 286/2006, Articles 6, 7 and 11]*

- Conducts periodical risk assessment and noise measurements, at least every three years;
- Conducts initial hearing tests (prior to performing work related to noise exposure), as well as subsequent periodic hearing tests at least every five years; and
- Provides hearing protection devices to any workers that request them?

15.65 If the daily equivalent noise level in a workplace exceeds 85 dBA, are the preventive measures specified in Question 15.64 adopted with the following modifications: *[Royal Decree 286/2006, Articles 6, 7 and 11]*

- The periodical risk assessment and noise measurements are conducted at least annually;
- The periodic hearing tests are conducted at least every three years; and
- All exposed workers are provided with hearing protection?

15.66 If the daily equivalent noise level in a workplace exceeds 87 dBA, or if the peak level exceeds 140 dBA, is compliance with the following requirements achieved: *[Royal Decree 286/2006, Article 8]*

- The facility takes immediate actions to reduce and maintain noise levels below 87 dBA;
- The facility analyzes the causes for these exceedances and implements a program specifying techniques to diminish noise generation or propagation; and
- All affected workers and worker representatives, as well as any in-house health and safety personnel, are informed of any such causes and any abatement techniques to be initiated?

Notes: In this case, for the determination of noise levels, the facility must take into account the attenuation provided by the hearing protection devices. [Royal Decree 286/2006, Article 5(2)]

Exposure to Mechanical Vibrations

Notes: The following definitions apply to requirements specified in this subsection: [Royal Decree 1311/2005, Article 2]

- "Hand-arm vibration" is the mechanical vibration that, when transmitted to the human hand-arm system/areas, involves a risks to the health and safety of workers, and in particular including vascular, bone or joint, neurological or muscular disorders; and
- "Whole-body vibration" is the mechanical vibration that, when transmitted to the whole body, entails risks to the health and safety of workers, and in particular including lower-back morbidity and trauma to the spine.

15.67 Has the facility conducted an evaluation of the workplace to determine if workers are exposed to mechanical vibrations, and to determine if exposure levels (as addressed in the notes to this question) have been exceeded? *[Royal Decree 1311/2005, Article 4]*

Notes: The vibration evaluation must consist of the following components: [Royal Decree 1311/2005, Article 4]

- An evaluation of existing workplaces; and*
- Additional evaluations of any newly-created work position, or of any existing position that is affected by modifications that could cause a significant variation in the exposure level for any workers.*

This evaluation must include mechanical vibration exposure monitoring, conducted in accordance with the criteria set forth in Appendix 15-D. [Royal Decree 1311/2005, Article 3(1) and 3(2) and Annex] When the worker exposure varies significantly from one shift to another, a 40 hour reference period equivalent level can be used in place of the 8 hours equivalent level, as long as such substitution has been justified and documented in the facility's Occupational Risk Assessment (see the Subsection in Section 10.0 of this protocol entitled "Occupational Risk Assessment"). However, workplaces where the daily equivalent level (daily exposure limit value standardized to an 8 hour reference period) for hand-arm vibration and whole-body vibration is consistently less than 2.5 m/s^2 and 0.5 m/s^2 , respectively, are exempt from these monitoring requirements. [Royal Decree 1311/2005, Article 3(3)]

The level of exposure to mechanical vibration may be assessed by means of observation of specific work practices and by reference to relevant information on the probable magnitude of the vibration corresponding to the equipment or the types of equipment used in the particular conditions of use and including such information provided by the manufacturer of the equipment. Such observation of specific work practices differs from conducting measurements/monitoring, which requires the use of specific equipment and the adequate methodology. [Royal Decree 1311/2005, Article 4(2)]

15.68 If the results of measurements/monitoring of mechanical vibration levels indicate that the daily equivalent level of a workplace exceeds 2.5 m/s^2 for hand-arm vibration or 0.5 m/s^2 for whole-body vibration, does the facility established and implemented the following measures: [Royal Decree 1311/2005, Article 5.2]

- The facility has established and implemented a program of technical and/or organizational measures intended to reduce to a minimum the exposure to mechanical vibration and the associated risks, taking the following into account:*
 - Other working methods that require less exposure to mechanical vibration;*

- The choice of appropriate work equipment of appropriate ergonomic design, taking into account the work to be done, that produces the least possible vibration;
 - The provision of auxiliary equipment that reduces the risk of injuries caused by vibration, such as seats that effectively reduce whole-body vibration and handles which reduce the vibration transmitted to the hand-arm system;
 - Appropriate maintenance program for work equipment, the workplace and workplace systems;
 - Limitation of the duration and intensity of the exposure;
 - Appropriate work schedules with adequate rest periods; and
 - The provision of clothing to protect exposed workers from cold and damp; and
- The facility ensures the appropriate health surveillance of workers based on the outcome of the risk assessment provided (and as further addressed in notes to Question 15.69)?

15.69 If the measurement results for mechanical vibration levels indicate that the daily equivalent level of a workplace exceeds 5 m/s^2 for hand-arm vibration or 1.15 m/s^2 for whole-body vibration, does the facility meet the following requirements: [Royal Decree 1311/2005, Article 5.3]

- Takes immediate actions to reduce exposure below the exposure limit value;
- Analyzes the reasons why the exposure limit value has been exceeded; and
- Implements the protection and prevention measures, accordingly, to prevent the exposure limit value from being exceeded again?

Notes: The above-mentioned mechanical vibration levels were not applicable to facilities with vibrating equipment placed into service before 6 July 2007. Under such circumstances, the above-mentioned requirements will commence enforcement after 6 July 2010, or after 6 July 2012 for equipment used for agricultural and forestry activities. [Royal Decree 1311/2005, Sole Transitory Article]

Exposure to Radioactive Substances

Notes: Due to the limited scope of this protocol in regard to radiation requirements, auditors of facilities with significant radiation activities may wish to access the Royal Decree 783/2001 for more details on radiation requirements. Such facilities should be reviewed for the surveillance requirements detailed in Title V (Articles 49 through 57) on protective measures for the general public and population. Other specific portions of this Decree are referenced throughout this subsection for areas not covered in this subsection.

Although beyond the scope of this protocol, the auditors may also wish to access Royal Decree 1085/2009, for more detail on the installation and operation of X-ray equipment and facilities, including the necessary permits for the establishment of such installation and training requirements for the medical personnel working within them.

The requirements of both Royal Decree 1085/2009 and Royal Decree 783/2001 can be accessed at the Spanish Gazette (Boletín Oficial del Estado – BOE) website as indicated in the notes at the beginning of this protocol section.

The requirements in this subsection relating to radioactive substances apply to any practices that involve a risk from ionizing radiation emanating from an artificial source or from a natural radiation source in cases where natural radionuclides are or have been processed with respect to their radioactive, fissile or fertile properties, including the following: [Royal Decree 783/2001, Article 2.1]

- The production, processing, handling, use, holding, storage, transport, import to and export within the European Community, and disposal of radioactive substances;*
- The operation of any electrical equipment emitting ionizing radiation and containing components operating at a potential difference of more than 5 kV;*
- The marketing of radioactive sources and technical assistance for equipment that incorporates radioactive sources, or are producers of ionizing radiation; and*
- Any other process specified by the competent authority.*

The requirements also apply to the following: [Royal Decree 783/2001, Article 2.2-2.3]

- Activities performed by external companies referred to in Royal Decree 413/1997, on the Operational Protection of External Workers with Risk of Exposure to Ionizing Radiation for Work in Controlled Areas (see Question 15.91);*
- To any intervention in cases of radiological emergencies or in cases of lasting exposure resulting from the after-effects of a radiological emergency (see Title VI, Articles 58 through 60, of Royal Decree 783/2001 for specifics); and*
- Work activities which are not covered in the first paragraph above, but which involve the presence of natural radiation sources and lead to a significant increase in the exposure of workers or members of the public which cannot be disregarded with regard to radiation protection (see Question 15.92 and its notes).*

This subsection does not apply to exposure to radon in dwellings or to the natural level of radiation, i.e. to radionuclides contained in the human body, to cosmic radiation prevailing at ground level or to aboveground exposure to radionuclides present in the undisturbed earth's crust. [Royal Decree 783/2001, Article 2.4]

Dose limits for members of the public are defined as follows: [Royal Decree 783/2001, Article 13]

- *The effective dose is 1 millisievert (mSv) in a year; however, in special circumstances, a higher effective dose may be authorized in a single year, provided that the average over five consecutive years does not exceed 1 mSv per year; and*
- *In addition, the following organ-specific limits apply:*
 - *The limit on equivalent dose for the lens of the eye is 15 mSv in a year; and*
 - *The limit on equivalent dose for skin is 50 mSv in a year averaged over any 1 cm² of skin, regardless of area exposed.*

15.70 If the facility performs any of the activities listed in the notes at the beginning of this subsection, has it submitted a justification for such activities to the competent authority, and does it comply with any requirements established by the authority? *[Royal Decree 783/2001, Article 4.1]*

Notes: The competent authority will make its determination in conjunction with the Nuclear Safety Council. [Royal Decree 783/2001, Article 4.1]

15.71 Does the facility ensure that the effective dose limit for exposed workers does not exceed 100 millisieverts (mSv) in a consecutive five-year period, and a maximum effective dose of 50 mSv in any single year? *[Royal Decree 783/2001, Article 9.1]*

Notes: In addition, the following organ-specific equivalent dose limits apply: [Royal Decree 783/2001, Article 9.2]

- *For the lens of the eye - 150 mSv in a year;*
- *For skin - 500 mSv in a year (this limit applies to the average dose over any area of 1 cm², regardless of the area exposed); and*
- *For the hands, forearms, feet and ankles - 500 mSv in a year.*

The effective dose limit of exposure for trainees and students 18 years or older is the same as those indicated above. [Royal Decree 783/2001, Article 11.1]

“Effective dose” is defined as the sum of the weighted equivalent doses in all the tissues and organs of the body from internal and external irradiation, and is defined by the equation in Annex I of the Royal Decree 783/2001 (see the Spanish Gazette website listed at the beginning of this protocol section). Article 12 of the Royal Decree lists circumstances when

"special exposures" may be allowed by the Nuclear Safety Council. [Royal Decree 783/2001, Annex I]

"Exposed worker" is defined as any person, either self-employed or working for any employer, subject to an exposure incurred at work from practices specified in the introductory note to this subsection and liable to result in doses exceeding a dose level equal to the dose limits for members of the public (as defined in the introductory notes to this subsection). [Royal Decree 783/2001, Annex I]

- 15.72** Does the facility prohibit the employment of any persons under 18 years of age from being assigned to any work that would result in their being classified as exposed workers (as defined in the notes to Question 15.71)? *[Royal Decree 783/2001, Article 19]*

Notes: This requirement is without prejudice to the provisions in Question 15.71. [Royal Decree 783/2001, Article 19]

- 15.73** Does the facility ensure that the effective dose limit of exposure for trainees and students between the ages of 16 and 18 does not exceed 6 mSv in any single year? *[Royal Decree 783/2001, Article 11.2]*

Notes: In addition, the following organ-specific equivalent dose limits apply: [Royal Decree 783/2001, Article 11.2]

- *For the lens of the eye - 50 mSv in a year;*
- *For skin - 150 mSv in a year (this limit shall apply to the dose average over any area of 1 cm², regardless of the area exposed); and*
- *For the hands, forearms, feet and ankles - 150 mSv in a year.*

- 15.74** If any pregnant woman employed at the facility informs the facility of her condition, does the facility immediately thereafter ensure any such woman is not exposed to levels exceeding those for members of the public? *[Royal Decree 783/2001, Article 10.1]*

Notes: See the notes at the beginning of this subsection for exposure limits to the general public.

- 15.75** Does the facility ensure that nursing mothers are not employed in work involving a significant risk (not defined) of radioactive contamination? *[Royal Decree 783/2001, Article 10.2]*

Notes: The term, "radioactive contamination" means contamination of any material, surface or environment, or of a person, by radioactive substances. In the specific case of the human body, this radioactive contamination includes both external skin contamination and

internal contamination irrespective of method of intake (inhalation, ingestion, etc.). [Royal Decree 783/2001, Annex I]

15.76 Does the facility ensure protection of exposed workers is conducted as follows: *[Royal Decree 783/2001, Article 15]*

- Prior evaluation is conducted to identify the nature and magnitude of the radiological risk to exposed workers and implementation of the optimization of radiation protection in all working conditions;
- Workplaces are classified into different areas, where appropriate, by reference to an assessment of the expected annual doses and the probability and magnitude of potential exposures;
- Workers are classified into different categories according to their work conditions;
- Control measures and monitoring relating to the different areas and working conditions, including where necessary, individual monitoring are implemented; and
- Medical surveillance is implemented?

15.77 If there exists the possibility of exposure to ionizing radiation in excess of 1 mSv per year or an equivalent dose of 1/10 of the dose limits for the lens of the eyes, skin and extremities (as specified in the note to Question 15.71), has the facility made a distinction between controlled areas and supervised areas? *[Royal Decree 783/2001, Article 16]*

Notes: The following definitions of area types apply to this subsection: [Royal Decree 783/2001, Article 17.1]

- “Controlled area” is an area where there exists the possibility of receiving an effective dose that is greater than or equal to 6 mSv per year or an equivalent dose of more than 3/10 of the dose limits for the lens of the eyes, skin and extremities (as specified in the note to Question 15.71 above). These areas are subject to special rules for the purpose of protection against ionizing radiation or preventing the spread of radioactive contamination, and are areas to which access is controlled; and
- “Supervised area” is an area, other than a controlled area, where there exists the possibility of receiving an effective dose that is greater than 1 mSv per year or an equivalent dose of 1/10 of the dose limits for the lens of the eyes, skin and extremities (as specified in the notes to Question 15.71).

Controlled areas are sub-divided as follows: [Royal Decree 783/2001, Article 17.2]

- *“Prohibited access area” is an area where there exists the possibility of receiving an effective dose that is greater than those specified in Question 15.71 and its notes;*
- *“Regulated area” is an area where there exists the possibility of receiving an effective dose that is greater than those specified in Question 15.71 and its notes for short periods of time and that requires special measures from the point of view of optimization; and*
- *“Temporarily restricted area” is an area where there exists (a temporary) possibility of receiving an effective dose that is greater than those specified in Question 15.71 and its notes.*

15.78 Do controlled areas at the facility meet the following requirements: *[Royal Decree 783/2001, Article 18.1-18.2]*

- The controlled areas are delineated with adequate signage to indicate the existing exposure risks (as indicated in the notes below);
- Access is restricted to individuals who have received appropriate instructions, and such areas are controlled in accordance with written procedures provided by the facility;
- If a risk of radioactive exposure exists, the use of individual dosimeters is obligatory; and
- If a risk of radioactive contamination exists, the use of PPE that is adequate for the existing risk is obligatory, and the exit from the area is equipped with detection devices that can check for contamination of persons and equipment?

Notes: The safety signs for controlled and supervised areas must use the established standards published in Norm UNE-73-302 and meet the following requirements: [Royal Decree 783/2001, Annex IV]

- *Risk of exposure is shown using the international “trébol” or tri-foil symbol for ionizing radiation, framed by a rectangular border using the same color as the symbol and the same width as the diameter of the interior circumference of the symbol;*
- *Controlled areas are marked with a green tri-foil on a white background;*
- *Temporarily restricted areas are marked with a yellow tri-foil on a white background;*
- *Regulated areas are marked with an orange tri-foil on a white background;*

- *Prohibited access areas are marked with a red tri-foil on a white background; and*
- *Supervised areas are marked with a blue-grey tri-foil on a white background.*

See Royal Decree 783/2001, Annex IV, available at the Spanish Gazette website referenced at the beginning of this protocol section, for more specific details.

15.79 Does the facility ensure that it performs dosimetric measurements of supervised areas in order to arrive at a specific estimate of the doses that may be received? [Royal Decree 783/2001, Article 18.3]

Notes: The radiological monitoring of the work environment must include the following (as appropriate): [Royal Decree 783/2001, Article 26.1]

- *The measurement of external dose rates, indicating the nature and quality of the radiation in question;*
- *The measurement of the radioactivity concentration in air and surface density of the contaminating radioactive substance, indicating their nature and their physical and chemical states.*

The results of such monitoring must be retained by the facility and kept available for review by the competent authority. When updated, these results are used to estimate individual doses. [Royal Decree 783/2001, Article 26.2] <RECORD KEEPING>

15.80 If any exposed workers (as defined in the notes to Question 15.71) are employed at the facility, for the purpose of medical surveillance, has the facility classified workers as either Category A or Category B workers? [Royal Decree 783/2001, Article 20]

Notes: The classifications are defined as follows: [Royal Decree 783/2001, Article 20]

- *“Category A workers” are those exposed workers who, due to their work conditions can receive an effective dose of greater than 6 mSv per year or an equivalent dose of greater than 3/10 of the dose limits for the lens of the eye, skin and extremities specified in the notes to Question 15.71; and*
- *“Category B workers” are those workers who, due to their work conditions are considered likely to receive an effective dose of greater than 6 mSv per year or an equivalent dose greater than 3/10 of the dose limits for the lens of the eye, skin and extremities specified in the notes to Question 15.71.*

15.81 Does the facility provide exposed Category A workers with the following individual monitoring provisions: [Royal Decree 783/2001, Article 28]

- If the risk of exposure is external, the use of individual dosimeters that measure external doses, representative of the dose for the total organism during an entire work day;
- If the risk of exposure is partial, or not homogeneous throughout the organism, use of dosimeters that are adequate to for the parts of the body that would be potentially most affected; and
- In the case of internal contamination, the use of any relevant tests and analyses to evaluate the corresponding dose?

15.82 Does the facility ensure that Category B workers are provided with monitoring that is, at a minimum, sufficient to demonstrate that such workers are correctly classified in Category B? *[Royal Decree 783/2001, Article 29]*

Notes: This monitoring may be achieved by environmental monitoring (see the notes to Question 15.79) if this can demonstrate that they are classified correctly. [Royal Decree 783/2001, Article 29]

If the use of individual dosimetric monitoring is not possible or inappropriate for the situation, individual surveillance may be based on individual measurements made from other exposed workers or from environmental monitoring results (see the notes to Question 15.79). [Royal Decree 783/2001, Article 30]

15.83 Has the facility written a protocol for the dosimetric systems (or instruments) and procedures used for monitoring areas and submitted a copy to the Nuclear Safety Council? *[Royal Decree 783/2001, Article 31]*

15.84 In the case of an emergency exposure, does the facility comply with the following individual monitoring requirements: *[Royal Decree 783/2001, Article 32]*

- Relevant doses and their distribution in the body are assessed; and
- Individual monitoring or assessment of the individual doses is carried out as appropriate to the circumstances?

Notes: A special health surveillance exam of those affected, and an evaluative study of the dose received, must be performed if an exceedance of the exposure doses established in Question 15.71 occurs. [Royal Decree 783/2001, Articles 33 and 45]

- 15.85** Does the facility ensure that the exposure of classified workers (as indicated in Question 15.81 and Question 15.82) is monitored at least monthly for external exposure, and at an interval to be determined on a case by case basis for internal exposure? [Royal Decree 783/2001, Article 27.1]

Notes: Individual dosimetric monitoring (both internal and external) is to be performed by the Personal Dosimetric Services that are authorized by the Nuclear Safety Council. [Royal Decree 783/2001, Article 27.2]

- 15.86** Does the facility ensure that it transmits the results of dosimetric monitoring to its prevention services department, so they can interpret the results from a health standpoint? [Royal Decree 783/2001, Article 27.3]

- 15.87** Does the facility ensure that it complies with the following record keeping and notification requirements regarding dosimetric monitoring data: [Royal Decree 783/2001, Article 38]
<RECORD KEEPING>

- Records and notifications are made available to the competent authorities and the Nuclear Safety Council; and
- Records and notifications are made available, as certified copies, to any worker(s) concerned?

Notes: These records must be retained at the facility until the individual has or would have attained the age of 75 years, but in any case not less than 30 years from the termination of the work involving exposure to ionizing radiation. [Royal Decree 783/2001, Article 38.1]

<RECORD KEEPING>

See Royal Decree 783/2001, Articles 34-38, for additional details on record keeping requirements. This Royal Decree is available at the Spanish Gazette website referenced at the beginning of this protocol section.

- 15.88** If the facility employs any Category A exposed workers, does it provide these workers with proper medical surveillance examinations as indicated in the Subsection entitled, “Medical Surveillance” and as follows: [Royal Decree 783/2001, Articles 40 and 41]

- Provided prior to beginning the relevant work, prior to medical examination, or prior to classification as a Category A worker, in order to check that there is no reason that would legally prevent them from performing the work and to determine their work aptitude; and

- Provided during periodic health reviews?

Note: If the medical examination concludes that a worker is not fit for a Category A position, it is prohibited to post that worker in such a position. [Royal Decree 783/2001, Article 43.2]

The state of health of each worker must be reviewed at least once annually (to determine whether they remain fit to perform his/her duties), and more frequently if the worker's exposure conditions or state of health so require. [Royal Decree 783/2001, Article 40.2]

The interval between examinations and the elements of the exam should be adapted on a case by case basis, depending on the type of exposure the worker has received. [Royal Decree 783/2001, Article 42]

- 15.89** Does the facility keep separate medical records for any Category A worker? [Royal Decree 783/2001, Article 44.1] **<RECORD KEEPING>**

Notes: The medical records must be retained at the facility until the individual has or would have attained the age of 75 years, but in any case not less than 30 years from the termination of the work involving exposure to ionizing radiation. [Royal Decree 783/2001, Article 44.2] <RECORD KEEPING>

- 15.90** Does the facility consult qualified experts or the approved occupational health services, with respect to the examination and testing of protective devices and instruments for conducting measurements, and in accordance with the following: [Royal Decree 783/2001, Article 22]

- Prior critical examination of plans for installations from the point of view of radiation protection;
- The acceptance into service of new or modified sources from the point of view of radiation protection;
- Regular checks of the effectiveness of protective devices and techniques; and
- Regular calibration of the instruments for measurements and regular confirmation that they are serviceable and correctly used?

Notes: The Nuclear Safety Council may require the use of a Radiological Protection Service or a Radiological Technical Protection Unit. [Royal Decree 783/2001, Article 23]

15.91 If the facility has any external workers who perform work in controlled areas, does it ensure that the following requirements are met prior to the start of work: *[Royal Decree 413/1997, Article 5]*

- The employer of the external workers is registered with the Register for External Companies ("Registro de Empresas Externas");
- The workers are medically approved for the work assigned;
- The workers have received basic training pertaining to radiological protection;
- The workers have been provided with information and training specific to the work and any work conducted in controlled areas;
- The workers are subjected to individual dosimetry monitoring suited to the type of work;
- The dosimetric data are complete and dosimetric conditions of the worker are adequate for the nature of the job;
- For any work conducted, the workers are provided with personal protective equipment that must be used in the controlled area; and
- Prior to completion of the work, any data referring to the work, the time frame, estimated operational dose resulting from dosimetric monitoring, and the internal dose determined is added to the worker's individual radiological monitoring documents?

Notes: In the absence of the dosimetric data referred to above, conditions can be substituted by operational (environmental) dosimetry for a maximum of 90 days. [Royal Decree 413/1997, Article 5(2)(A)(f)]

15.92 If natural radiation sources exist at the facility, does it perform a study to evaluate if there exists a significant increase in the risk of radiation exposure to workers or to members of the public that cannot be disregarded from the point of view of radiation protection? *[Royal Decree 783/2001, Article 62.1]*

Notes: The competent authority, in accordance with materials provided by the Nuclear Safety Council, will provide instructions on to how to proceed with these evaluations, and if applicable, will require corrective measures to reduce exposure and the application of

radiation protection measures. The following specific types of activities may require this type of study: [Royal Decree 783/2001, Articles 62.1, 62.2 and 63.1]

- Work activities where workers and, where appropriate, members of the public, are exposed to thoron or radon daughters or gamma radiation, or any other exposure in workplaces such as spas, caves, mines, underground workplaces and aboveground workplaces in identified areas;*
- Work activities involving operations with, and storage of, materials not usually regarded as radioactive but which contain naturally occurring radionuclides, causing a significant increase in the exposure of workers and, where appropriate, members of the public;*
- Work activities that lead to the production of residues not usually regarded as radioactive but that contain naturally occurring radionuclides, causing a significant increase in the exposure of members of the public and, where appropriate, workers; and*
- Operation of aircrafts.*

15.93 Does the facility comply with the following the Nuclear Safety Council inspection requirements: *[Royal Decree 783/2001, Article 67]*

- Provides access to work areas, equipment and instrumentation;*
- Provides any information and documentation requested; and*
- Allows monitoring and/or sampling to take place?*

Nuclear or Radioactive Installations

Notes: The following definitions apply to requirements specified in this subsection:

- “Nuclear installation” is any of the following: [Royal Decree 1836/1999, Article 11]*
 - A fixed installation for the production of energy by a nuclear reactor (any structure that contains nuclear fuels placed in such a manner inside the reactor that self-propagating nuclear fission processes can take place without an additional source of neutrons);*
 - An installation that uses nuclear fuel to produce nuclear materials and a plant that is appropriate to the processing of nuclear material, including treatment facilities or facilities for reprocessing spent nuclear fuel;*
 - Nuclear substance storage installations (except the locations where said substances are stored incidentally during transportation); and*
 - Devices and installations that use nuclear fission or fusion reactions to produce energy or that are intended to produce or develop new energy sources; and*
- “Radioactive installations” include the following: [Royal Decree 1836/1999, Article 34]*

- Any type of installation that contains an ionizing radiation source;
- Equipment producing ionizing radiation that functions at a potential difference that exceeds 5 kV; and
- Locations, laboratories, factories and installations that produce, utilize, possess, treat, handle or store radioactive materials, except for the incidental storage during transportation.

Annex I of Royal Decree 1836/1999 lists specific types of radioactive installations that are exempt from the authorization requirements set forth in this question. [Royal Decree 1836/1999, Annex I] This Annex has been amended by Royal Decree 783/2001, Instruction IS/05 and Royal Decree 35/2008. The Royal Decrees and the Instruction previously mentioned in this paragraph are available at the Spanish Gazette website indicated at the beginning of this protocol section.

15.94 If the facility operates a nuclear or radioactive installation, does it possess the appropriate approval from the Ministry of Industry and Energy and the Nuclear Safety Council, or from the competent authority of the relevant Autonomous Community (if functions have been transferred to the regional authority)? *[Royal Decree 1836/1999, Articles 1 through 4]*

Notes: The following must be obtained for nuclear installations and for radioactive installations: [Royal Decree 1836/1999, Articles 12 and 36]

- Approval prior to the construction project for the facility;
- Construction permit;
- Start up/operating authorization;
- Modification authorization; and
- Dismantling authorization.

15.95 If the facility performs any of the following activities, has it obtained authorization from the General Directorate of Energy and the Nuclear Safety Council, and does it comply with the conditions set forth in the authorization: *[Royal Decree 1836/1999, Article 74]*

- The manufacture of devices, equipment and accessories that incorporate radioactive materials or ionizing radiation, although the use thereof is within the exemptions provided in Annex I of Royal Decree 1836/1999;
- The introduction into the Spanish market of consumer products incorporating radioactive materials, although the use thereof is within the exemptions provided in Annex I;
- The marketing of radioactive materials and appliances, equipment, fixtures or other components (other than the consumer products described in the previous

bullet) which incorporate radioactive materials or ionizing radiation, although the use thereof is within the exemptions set out in Annex I;

- The transfer of radioactive material for which it does not hold an authorization; and
- Technical maintenance/repairs of radioactive devices and equipment that generate ionizing radiation?

15.96 Does the facility ensure that supervisors and operators of any radioactive installations (as noted below) are licensed by the Nuclear Safety Council (NSC) for the type of radioactive installations operated, and for the type of activities performed? [*Instruction IS-07/2005, First Article*]

Notes: Licenses are valid for a period of 5 years. The Nuclear Safety Council maintains a register, by category, of licensed operators and supervisors. [Royal Decree 1836/1999, Article 56]

This question applies to the following categories of radioactive installations and activities: [Instruction IS-07/2005, Third and Fifth Articles]

- *Nuclear medicine: Installations in which non-encapsulated radioactive sources are applied for the diagnosis of patients or for therapeutic purposes;*
- *Radiotherapy: Installations that use ionizing radiation from generating equipment or a radioactive source (usually encapsulated) for therapeutic purposes;*
- *Laboratories with non-encapsulated sources: Installations where non-encapsulated radioactive material is handled that is distinct from nuclear medicine;*
- *Industrial radiography: Installations that use equipment generating radiation from a radioactive source or are provided with an encapsulated radioactive source, either fixed or mobile, in non-medical radiography or radioscopy;*
- *Control of processes, analytical techniques, and activities with limited risks: Installations with radioactive sources or generators that, with regard to the intrinsic safety of the equipment, or the simplicity of the activities, only require generic knowledge with regard to radiological protection. This category applies to activities such as simple marketing, inspections, material analysis, radiation metrology, and the irradiation of equipment consisting of an inaccessible chamber/enclosure (“equipos de cámara inaccesible”); and*
- *Unique installations and new practices: New practices with radiation and unique/unusual installations that do not meet any of the fields of application listed above and that will be provided with specific licenses, for which the terms and conditions will be provided upon their issuance. These licenses will be*

registered with a specific name and specified conditions and may only be applied to other installations only upon approval by the NSC.

15.97 If the facility has workers that perform marketing activities or technical assistance for the types of equipment and installations referenced in the notes to Question 15.96, do they have licenses that correspond to the category of work for the radiation equipment involved? *[Instruction IS-07/2005, Sixth Article]*

15.98 If the facility has an investigative or instructive radiation installation where more than 50 employees use radioactive materials and/or the number of locations where radioactive isotopes are handled is more than 10, does it have an in-house Radiological Protection Service? *[Instruction IS-08/2005, Third Article, 3)a)]*

Notes: The necessity for specific radiological guidance, regarding the establishment of an in-house Radiological Protection Service or the contracting of a Radiological Technical Protection Unit, is determined by the NSC on a case by case basis (i.e., other facilities may also be subject to this requirement). The NSC evaluates the level of risks associated with the following entities and installations: [Instruction IS-08/2005, Third Article, 3)b)]

- Installations for the production and marketing of radioactive isotopes;*
- Installations for industrial gamma radiography (in Spanish “gammagrafía”) and industrial radiology; and*
- Industrial irradiation installations.*

The following definitions apply to this question and to Question 15.99 and Question 15.100: [Instruction IS-08/2005, Second Article]

- “Radiological Protection Service” is the facility’s own service that is specifically authorized by the NSC to provide health services for protection against ionizing radiation; and*
- “Radiological Technical Protection Unit” is a contracted service that is specifically authorized by the NSC to provide health services for protection against ionizing radiation.*

This Instruction also applies to nuclear installations and radioactive-nuclear fuel cycle installations, as well as radioactive medical/health centers. These types of installations are beyond the scope of this protocol. However, should the facility have these types of installations, the Instruction can be accessed at the Spanish Gazette website indicated at the beginning of this protocol section.

15.99 If the facility is required by the NSC to contract an in-house Radiological Protection Service, did it receive an authorization for the Service, with regard to its personnel, technical methods and documentation, within one year of notification of the requirement (or by 6

October 2006 for those facilities indicated in Question 15.98)? *[Instruction IS-08/2005, Fourth Article, 3) paragraph 1]*

- 15.100** If the facility is required by the NSC to contract an external Radiological Technical Protection Unit, did it engage in a contract for this service within 3 months of notification of the requirement? *[Instruction IS-08/2005, Fourth Article, last paragraph]*

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is intended for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter one does not contain the electronic links and other functionality contained in the MS Word version.

Each of the questions from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, there are electronic links back to the original protocol document. To return to where you were in the AQC after following a link, use the “Return to Audit Quick Check” button located on the Audit Quick Check Toolbar.

Audit Quick Check Toolbar

The AQC Toolbar contains several automated functions and should be visible when you open the AQC document. To activate the toolbar if it is NOT visible, select View | Toolbars | and then click on Audit Quick Check Toolbar. You may move the toolbar to anyplace on the document by left clicking anywhere inside of the upper portion of the Toolbar (dark blue area) and dragging it to the desired location.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X’s to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

At the end of the AQC there is a section entitled, Additional Questions. You may add more questions at this point. Examples might include corporate requirements or best management practices. We have provided space for the insertion of several additional questions. If you wish to delete these additional spaces, select the row(s) you want deleted and press shift+delete. To add more questions, including the check boxes, copy and paste the last row of the table. To do this, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Then, copy the information in the row above by placing the cursor on the far left side of the row to be copied, outside the table margin, left click to highlight the information to be copied, and then right click and click on “Copy.” Lastly, move the cursor into the empty row and paste the copied information (Control C). You can continue to sequentially number the questions by putting your cursor on the existing number and changing it. Use “Control Tab” to create the spacing between the question number and the text of the question.

Sorting Responses and Transferring Information

There is a sort feature that you may want to use following completion of the audit. A sort box appears on the far right side of the toolbar. Press “Sort By” and then four choices will be identified, three of which correspond to a specific column number. For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click on Column 3 (unless you have customized the column headings and re-organized them, in which case you will select the column number of interest to you). Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

The fourth sort choice, Sequential, will sort the responses sequentially by column number (i.e., Column 1 responses first, followed by Column 2 responses, etc.).

WARNING: Once the sort feature has been used, you cannot automatically revert back to the original order unless you hit the “Undo Typing” symbol in the MS Word Toolbar. As a result, it is recommended that you save the “sorted” file to a different file name. In that way, you can preserve the original Audit Quick Check information, including original ordering of that information, plus the sorted information.

Transferring Information

Once you have collated all of the Does Not Comply questions (or whatever category of questions in which you have an interest), you can use “Block” and “Copy” to transfer that information to any other document. This feature will help in the eventual audit report writing.

Printing Quick Checklist

Click on the Print Quick Check button at the end of the document to print out only the Audit Quick Check; it will print to whatever you have designated as your default printer. If you are outside of your office and wish to print to a local printer, you will need to change the default printer setting on your computer to a local printer before using the Print Quick Check button.

15.0 INDUSTRIAL HYGIENE

AUDIT QUICK CHECK

SITE: _____

DATE: _____

ASSESSOR: _____

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
Industrial Hygiene			
See protocol for notes.			
Work Environments			
15.1 In any enclosed work areas, does the facility meet the following conditions: [Royal Decree 486/1997, Annex III, 3 a-b] – The temperature where sedentary work is conducted is between 17 and 27 degrees Celsius; – The temperature where light work is conducted is between 14 and 25 degrees Celsius; and – Relative humidity is between 30 and 70 percent, except where risk of static electricity exists, in which case the upper limit is 50 percent? See protocol for notes. Comments:	☐	☐	☐
15.2 Does the facility ensure that workers are not exposed, in a continuous or frequent manner, to air currents that exceed the following limits: [Royal Decree 486/1997, Annex III, 3 c] – For workers in work environments at normal temperatures (not defined): 25 m/s; – For sedentary work in hot environments (not defined): 0.5 m/s; and – For non-sedentary work in hot environments: 0.75 m/s? See protocol for notes. Comments:	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
15.3 Does the facility comply with the following requirements pertaining to work environments: [Royal Decree 486/1997, Annex III, 3 d, 4 and 5] – Air is replaced in workplaces at a rate of 30 cubic meters of clean air per hour per worker; and – In workplaces located outside, and for work that must be conducted outside, measures are implemented to protect the workers from inclement weather? Comments:			
15.4 If ventilation systems are used at the facility for purposes associated with worker health, does the facility ensure that these systems are maintained in proper operational condition and are equipped with a control system that indicates any damage to the system? [Royal Decree 486/1997, Annex II, 4] Comments:			
Workplace Illumination			
15.5 Does the facility comply with the minimum illumination levels noted in the table below? [Royal Decree 486/1997, Annex IV, 3] See protocol for notes. Comments:			
15.6 If a failure of illumination could cause a risk to the safety of the workers in any work area (or part of any work area) at the facility, are such work areas and parts equipped with emergency illumination (back up) and means for evacuation? [Royal Decree 486/1997, Annex IV, 5] Comments:			
Requirements for Display Screens			
See protocol for notes.			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
15.7 If any equipment with display screens is used at the facility, does the equipment comply with the following requirements: [Royal Decree 488/1997, Article 3, and Annex,1b] – The screen characters are well-defined and configured in a clear form, with sufficient space between the characters and the lines; – The screen image is stable, without flashing, flickering, or other forms of instability; – The screen can be easily adjusted for the luminosity and contrast between the characters and the background of the screen; – The screen is movable and inclinable, and able to be adapted to the needs of the specific user; and – The screen does not have reflections or reverberations that can bother the user? Comments:			
15.8 Does the facility ensure that the keyboards for display screen equipment comply with the following requirements: [Royal Decree 488/1997, Article 3, and Annex, 1c] – The keyboard is inclinable and independent of the screen to permit the worker to adopt a comfortable posture that does not cause the arms or hands of any user to tire; – There is sufficient space in front of the keyboard so that the user can lean his/her arms and hands; – The surface of the keyboard is dull, in order to avoid reflections; and – The keyboard symbols stand out sufficiently and are legible from the normal work station? Comments:			
15.9 Does the facility ensure that work stations for display screen equipment comply with the following requirements: [Royal Decree 488/1997, Article 3, and Annex, 1d and 1e] – The work table or surface has minimal reflection, and has sufficient dimensions for the flexible placement of the screen, keyboard, document and any accessories; – The document support accessory is stable and adjustable, and is placed in such a manner that uncomfortable movements of the head and eyes are reduced to a minimum;			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
– The seat is stable, and provides the user with the freedom of movement, allowing for a comfortable posture; – The height of the seat is adjustable; – The seat back may be reclined and its height is adjustable; and – A foot rest is available to any worker who requests one? Comments:			
15.10 If equipment with display screens is used at the facility, does the relevant work environment comply with the following requirements: [Royal Decree 488/1997, Article 3] – The work station has sufficient dimensions, and it provides sufficient space to permit changes in posture and worker-related movements; – The conditions of the workplace and the work station are installed so that light sources do not cause a direct glare and do not produce a distracting glare on the screen due to the following: – The location and technical characteristics of artificial light sources; or – Other light sources, such as windows, other openings, transparent or translucent partitions, and light colored equipment or partitions; – Windows are equipped with adequate and adjustable covering, for attenuating the natural light illuminating the work station; and – Equipment installed in the work station does not produce additional heat that can cause additional discomfort to workers? Comments:			
15.11 If any equipment with display screens is used at the facility, has the facility conducted a risk evaluation of the affected workers (i.e. effects include vision, physical impact, and mental strain)? [Royal Decree 488/1997, Article 3] Comments:			
15.12 If the results of any risk evaluation of the affected workers indicate the presence or possibility of a health and safety risk, has the facility adopted the technical and organizational measures necessary to eliminate or reduce the risk as much as possible (i.e. reduction of exposure time to display screen)? [Royal Decree 488/1997, Article 4]			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
Comments:			
15.13 If any equipment with display screens is used at the facility, does the facility provide affected workers with the health monitoring in accordance with the following schedule: [Royal Decree 488/1997, Article 4] – Prior to starting any work with display screens; – Following a period of adjustment at a level of risk determined by the responsible doctor; and – When disorders occur/emerge that could be caused by this type of work? Comments:			
15.14 If the results of the health monitoring indicate a need to implement further protective measures, does the facility provide affected workers with the appropriate protective measures (i.e. ophthalmological tests, vision protection, etc.)? [Royal Decree 488/1997, Article 4] Comments:			
Workplace Cleanliness			
15.15 Does the facility ensure the prompt removal of any wastes, grease stains, dangerous substances and other substances (i.e. stains, open/accessible containers or reservoirs) that could cause accidents or contaminate the work environment? [Royal Decree 486/1997, Annex II, 2] See protocol for notes. Comments:			
Room Dimensions and Space			
15.16 Does the facility comply with the following requirements relating to work space: [Royal Decree 486/1997, Annex I, A.1] – Work rooms have sufficient surface area, height and air space to allow workers to perform their work without risk to their safety, health or well-being; and			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
Room dimensions and spaces at work stations are such that they allow workers sufficient freedom of movement to perform their work? See protocol for notes. Comments:			
Rest Areas			
15.17 Does the facility comply with the following requirements pertaining to worker rest areas: [Royal Decree 486/1997, Annex V, A.3] - Rest rooms are large enough and equipped with an adequate number of tables and seats (with back supports) for the actual number of workers; - Pregnant women and nursing mothers are able to lie down to rest in appropriate conditions; - If working hours are regularly and frequently interrupted and no rest room is available, other rooms are provided where workers can stay during such interruptions, wherever this is required for the safety or health of workers; and - Appropriate measures are taken for the protection of non-smokers against discomfort caused by tobacco smoke in rest areas? Comments:			
Drinking Water			
15.18 Does the facility meet the following requirements pertaining to drinking water: [Royal Decree 486/1997, Annex V, A.1] - Drinking water is available to workers in sufficient quantities and is easily accessible; - All circumstances that could possibly contaminate the drinking water are avoided; and - At all drinking water sources an indication of their potability is provided (as long as doubts may exist regarding potability)? Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
Changing Facilities			
15.19 Does the facility comply with the following requirements relating to changing facilities: [Royal Decree 486/1997, Annex V, A.2] – Appropriate changing rooms are provided for workers if special work clothes are required and where, for reasons of health or propriety, they cannot be expected to change in another room; – Changing rooms are easily accessible, of sufficient capacity and provided with seating; – Changing rooms are sufficiently large and have facilities to enable each worker to lock away his/her clothes during working hours; – If circumstances so require (e.g. dangerous substances, humidity, dirt), lockers for work clothes are separate from those for ordinary clothes; – Separate changing rooms are provided for men and women; – If changing rooms are not required, each worker is provided with a place to store his/her clothes; – Adequate and suitable showers are provided for workers if required by the nature of the work or for health reasons; – Provisions are made for separate shower rooms or separate use of shower rooms for men and women; – Showers are equipped with hot and cold running water; – When the rooms housing the showers or wash basins are separate from the changing rooms, there is easy access between the two; and – Separate facilities are provided in the vicinity of the work stations, rest rooms, changing rooms and rooms housing showers and wash basins, including lavatories and wash basins? Comments:			
Personal Protective Equipment (PPE)			
See protocol for notes.			
15.20 If risks to worker health and safety cannot be eliminated through other technical or organizational means, or the facility performs activities listed in Annex III of Royal Decree 773/1997, does it require the use of PPE in such situations? [Royal Decree 773/1997, Article 4] Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
15.21 If the facility uses PPE, has it performed an assessment of the existing risks and selected the PPE accordingly, ensuring that the selection is appropriate to the needs of the facility? [Royal Decree 773/1997, Article 5] See protocol for notes. Comments:			
15.22 If the facility uses PPE, does it ensure that the equipment meets the following conditions: [Royal Decree 773/1997, Article 5 and 7.2] – Provides adequate protection from the existing hazards without leading to increased risk; – Is appropriate for the risks and conditions involved; – Is selected by taking into account the physiological and anatomical characteristics and the state of health of workers; – Is adjustable to the individual worker; – In the case of multiple hazards requiring the use of more than one piece of PPE, the equipment is compatible; and – Is used in circumstances and for lengths of time as determined by the level of risk, the frequency and length of exposure to risk, the workplace conditions, the type of PPE and additional risks derived from the use of PPE? Comments:			
15.23 Does the facility ensure that the use, storage, maintenance, cleaning, disinfection and repair of PPE used at the facility are performed in accordance with manufacturer's instructions? [Royal Decree 773/1997, Article 7.1] Comments:			
Prohibition of Certain Specified Agents or Work Activities See protocol for notes.			
15.24 Does the facility observe the prohibitions on the production, manufacture and use of the chemical agents listed in the following table? [Royal Decree 374/2001, Article 8.1 and Annex III] See protocol for Table.			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
See protocol for notes.			
Comments:			
15.25 If the facility uses any prohibited agents for an exempt activity (as defined in the notes to Question 15.24), does it comply with the following requirements: [Royal Decree 374/2001, Article 8.3] – The appropriate precautions are taken to protect the health and safety of the workers affected and to avoid exposure to the prohibited agents; – For processes in which prohibited agents appear as intermediate products: – The necessary measures are adopted to guarantee the fastest production and use of these substances; and – The intermediate products are kept in a closed system, and are only extracted in the minimum quantities necessary for control of the process or maintenance of the system; and – All information regarding the measures adopted for fulfillment of the above precautionary obligations is submitted to the labor authority, along with data on the following: – The reason for the exception; – The annual quantities used; – The activities and/or reactions or processes employed; – The number of exposed workers; and – The precautionary measures adopted, in particular, the technical and organizational measures taken in order to avoid exposure of the workers? See protocol for notes. Comments:			
15.26 If the facility uses any prohibited agents for an exempted activity (detailed in this subsection), has it adequately informed the workers of the health and safety hazards related to the agent or activity to which they are, or may be, exposed, as well as the precautions they must take against prohibited agents, including information regarding the following: [Law 31/1995, Article 18.1] and [Royal Decree 374/2001, Articles 9.1 and 9.2] – The results of risk evaluations, and any subsequent modifications to these results, addressing risks to worker health and safety on the job, including risks affecting the company as a whole and those at each workplace or function;			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
- Information on the hazardous chemical substances used in the workplace, including their names, the health and safety risks involved, their exposure limits and any other legal requirements that apply to them; - Measures and precautions to be adopted for individual and collective protection, as well as emergency response (including first aid, fire-fighting and worker evacuation); and - Access to all technical data provided by the supplier (such as Material Safety Data Sheets (MSDS)), which conform to norms on the classification, packaging, and labeling of such chemical substances and preparations? See protocol for notes. Comments:			

Evaluation of Chemical Exposure Risks

15.27 If the facility has hazardous chemical agents in the workplace, does it conduct a health and safety risk assessment (see the Subsection in Section 10.0 of this protocol entitled, "Occupational Risk Assessment") that includes an analysis of the following: [Royal Decree 374/2001, Article 3.1] - The hazardous properties of the agent, including information such as MSDS to evaluate their risks; - Environmental and biological threshold limit values; - The quantities of such agents that are used or stored; - The type, level and duration of worker exposure to such agents and any other factor that may effect the magnitude of the exposure risk, as well as accidental exposure; - The effect of preventive methods that have been or must be adopted; and - Conclusions from worker health surveillance that may have been conducted and any accidents or incidents (potential or actual) that may be caused by the presence of such agents? See protocol for notes. Comments:			
15.28 Does the facility ensure that the requirements detailed in Question 15.32 and the Subsection entitled, "Medical Surveillance" (Royal Decree 374/2001, Articles 5 and 6) are met, if an exceedance of either of the following occur: [Royal Decree 374/2001, Article 3.4 and Annex 1]			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
– A daily exposure to more than 0.15 mg/m³ of inorganic lead and its derivatives (in air at 20 degrees centigrade and 101.3 Kpa); and/or – The environmental limit values (VLAs) listed in the “Document on Occupational Exposure Limits for Chemical Agents” published by the National Institute for Health and Safety at Work (Instituto Nacional de Seguridad e Higiene en el Trabajo, INSHT) with a recommendation for application by the National Occupational Health and Safety Commission? See protocol for notes. Comments:			
15.29 If risks are present due to the inhalation of hazardous chemical agents, does the risk assessment (see Question 15.27) include the sampling of the concentrations of such agents in the air within the workplace breathing zone? [Royal Decree 374/2001, Article 3.5] See protocol for notes. Comments:			
15.30 If a new activity is introduced at the facility that uses hazardous chemical substances, does it ensure that the activity is evaluated for risks, and that appropriate preventative methods are in place prior to beginning such an activity? [Royal Decree 374/2001, Article 3.8] Comments:			
15.31 Does the facility ensure health and safety protection of its workers against the risks of using hazardous chemical agents, by eliminating or reducing such risks with the following methods: [Royal Decree 374/2001, Article 4] – The organization and planning of workplace systems; – The selection and installation of equipment; – The establishment of adequate equipment maintenance procedures for equipment using such agents or their wastes, as well as procedures for the handling, storage and transfer of these agents; – The adoption of adequate hygienic methods, including personal, as well as organizational and sanitary; – The reduction of the amount of such agents that are present in the workplace to levels that are the minimum necessary for the type of work done;			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
– The reduction of the number of workers exposed to such agents, or that may be exposed, to a minimum; and – The reduction, of the duration and intensity of exposure to such agents, to a minimum? Comments:			
15.32 Does the facility ensure that if a risk from exposure to hazardous chemical agents is indicated by the assessment indicated in Question 15.27, it implements the following preventative and protective measures: [Royal Decree 374/2001, Article 5] – The elimination and reduction of such agents to a minimum, preferably by the substitution of such agents with other chemical processes that, along with different conditions for use, are not hazardous or are less hazardous; or – If the nature of the activity does not allow the elimination of risk by substitution, the risk is avoided or reduced to a minimum by applying the following methods (prioritized in the order presented): – The use of work procedures, technical controls, equipment and materials that permit the isolation of the agent to the extent possible to avoid and reduce spills, emissions and direct contact with workers; – The use of ventilation or other collective protective measures and adequate organizational measures, preferably in the location where the risk originates; and – Use of personal protective equipment (see Subsection entitled, "Personal Protective Equipment (PPE)") when the methods above are insufficient and exposure to, or contact with the agent are unavoidable? See protocol for notes. Comments:			
Medical Surveillance			
See protocol for notes.			
15.33 If the facility determines that there is a risk to the health of workers due to a hazardous chemical evaluation (as detailed in the Subsection entitled, "Evaluation of Chemical Exposure Risks"), does it conduct periodic monitoring of the health status of workers as follows: [Royal Decree 39/1997, Article 37.3.3] and [Royal Decree 374/2001, Article 6.1]			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
– An initial health examination is performed whenever specific tasks with health risks are newly assigned or incorporated into workplace activities; – A health examination is performed whenever a worker returns after a prolonged absence due to health problems, to determine if they have an occupational cause, and to recommend appropriate protective measures; and – Worker health surveillance is conducted at regular periodic intervals? See protocol for notes. Comments:			
15.34 Does the facility also provide health surveillance examinations for workers under the following conditions: [Royal Decree 374/2001, Article 6.2] – If the relationship between the worker's exposure to a hazardous chemical agent (as defined in the note in the Subsection entitled, "Prohibition of Certain Specified Agents or Work Activities") and a specific illness or health problem can be established; – If the probability exists that an illness or health problem may be caused by the actual work conditions in which the worker performs his or her job; and – If investigative techniques exist that can reliably detect the symptoms of such an illness or health problem that involve little risk to the worker? See protocol for notes. Comments:			
15.35 If the facility has workers that work with hazardous chemical agents, does it ensure that health surveillance examinations are provided under the following conditions: [Royal Decree 374/2001, Article 6.3 and Annex II b] – Whenever established in a legal obligation/instrument; – Whenever such a surveillance is indispensable to evaluate the effect that work conditions have on a worker's health, as follows: – It cannot guarantee that the worker's exposure to such agents will be sufficiently controlled; – Factors such as the worker's personal characteristics, state of health, and any disability (if one exists) that, due to the nature of such an agent, might create an increased sensitivity to that agent; and – Whenever an exposure to lead in air reaches 75 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), for eight hours a day, forty hours a week or a blood sample indicates a lead concentration higher than of 40 μg Pb/100ml?			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
See protocol for notes. Comments:			
15.36 Does the facility ensure that worker's are informed when health surveillance examinations (under the conditions listed in 15.35) are required, prior to assigning the worker to the task that involves a risk of exposure to the chemical agent in question? [Royal Decree 374/2001, Article 6.4] Comments:			
15.37 If a health examination indicates one of the following results, does the facility doctor or other competent health professional personally inform the worker of the results: [Royal Decree 374/2001, Article 6.7] – The worker has an identifiable illness, or shows evidence of the harmful effects (in the health professional's opinion) of exposure to a harmful chemical substance; or – A blood test result indicates an exceedance of the biological exposure limit for lead in the bloodstream of 70 µg Pb/100ml? See protocol for notes. Comments:			
15.38 If the results indicated in Question 15.37 occur, does the facility take the following steps: [Royal Decree 374/2001, Article 6.8] – Review its risk assessment; – Review the preventative methods used to eliminate or reduce risks; – Apply any additional methods necessary to eliminate or reduce risks, including the reassignment of the worker to a position where the potential risk of a new exposure does not exist; – Continue the health surveillance of the affected workers; and – Perform health surveillance examinations on workers who may have suffered similar exposure(s)? See protocol for notes. Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
15.39 In other cases, do health service personnel analyze the results of its medical surveillance examinations as follows: [Royal Decree 39/1997, Article 37.3.3f] – To investigate and analyze the possible relationships between the exposure to occupational risks and any health problems; and – To develop proposals for methods to improve workplace conditions and environments? See protocol for notes. Comments:			
Exposure to Carcinogens and Mutagens See protocol for notes.			
15.40 If any activity is likely to involve a risk of exposure to carcinogens or mutagens, has the facility assessed the risk to the workers' health or safety and determined the nature, degree and duration of any such exposure? [Royal Decree 665/1997, Article 3, as amended] See protocol for notes. Comments:			
15.41 If the assessment reveals a risk to workers' health or safety, does the facility initiate efforts to prevent the exposure or, where that cannot be accomplished, to reduce the level of exposure of workers to as low a level as is technically possible? [Royal Decree 665/1997, Article 4 and 5] Comments:			
15.42 If the assessment reveals a risk to workers' health or safety, does the facility take appropriate measures to ensure the following: [Royal Decree 665/1997, Article 6] – Workers do not eat, drink or smoke in working areas where there is a risk of contamination by carcinogens or mutagens; – Workers are provided with appropriate protective clothing or other appropriate special clothing; – Separate storage places are provided for working or protective clothing and for street clothes;			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
– Protective equipment is properly stored in a well-defined place; – PPE is checked and cleaned, if possible, before, and in any case, after, each use; – Defective equipment is repaired or replaced before further use; and – Workers are provided with appropriate and adequate washing, toilet and eating facilities (workers must be allowed a minimum of ten minutes before eating and before leaving the facility to clean-up)? See protocol for notes. Comments:			
15.43 If the assessment reveals a risk to workers' health or safety, does the facility maintain an up-to-date list of persons so affected, including the exposure to which each has been subjected? [Royal Decree 665/1997, Article 9] <RECORD KEEPING> See protocol for notes. Comments:			
15.44 If any carcinogen or mutagen is used, does the facility apply the measures described below: [Royal Decree 665/1997, Article 5, as amended] – Limitation on the quantities of carcinogens and mutagens at the place of work; – Minimize the number of workers exposed or likely to be exposed; – Design of work processes and engineering control measures so as to avoid and minimize the release of carcinogens or mutagens into the place of work to the lowest technically possible level; – The exposure does not exceed the limit values for carcinogens and/or mutagens set forth in Appendix 15-B (Annex III); – Evacuation of carcinogens and mutagens at their source, using local extraction system or general ventilation, are appropriate and compatible with the need to protect public health and the environment; – Use of existing appropriate procedures for the measurement of carcinogens and mutagens, in particular for the early detection of abnormal exposures resulting from an unforeseeable event or an accident; – Application of suitable working procedures and methods; – Provision of collective protection measures and/or, where exposure cannot be avoided by other means, individual protection measures; – Provision of hygiene measures, in particular regular cleaning of floors, walls and other surfaces;			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
– Provision of information for workers; – Demarcation of risk areas and use of adequate warning and safety signs including "No Smoking" signs in areas where workers are exposed or likely to be exposed to carcinogens or mutagens; – Drafting of plans to deal with emergencies likely to result in abnormally high exposure; – Provision of means for safe storage, handling and transportation, in particular by using sealed and clearly and visibly labeled containers; and – Provision of means for safe collection, storage and disposal of waste by workers, including the use of sealed and clearly and visibly labeled containers? See protocol for notes. Comments:			
15.45 If the assessment reveals a risk to workers' health or safety, does the facility ensure that each affected worker is subject to appropriate health surveillance (including pre-employment examination, periodic reviews thereafter, and reviews whenever the state of health so requires)? [Royal Decree 665/1997, Article 8] See protocol for notes. Comments:			
15.46 If an unforeseeable event or an accident takes place, which results in an abnormal exposure of workers to carcinogens or mutagens, does the facility inform the affected workers of this exposure? [Royal Decree 665/1997, Article 8.5] See protocol for notes. Comments:			
15.47 If an unforeseeable event or an accident takes place which results in an abnormal exposure of workers to carcinogens or mutagens, does the facility initiate the following actions until the situation is restored back to normal and the causes of the abnormal exposure are eliminated: [Royal Decree 665/1997, Article 7.1] – Only those workers who are essential to carrying out repairs and other necessary work are permitted to work in the affected area;			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
- The workers concerned are provided with protective clothing and individual respiratory protection equipment, which they must wear; the exposure is kept to the strict minimum duration necessary for each worker; and - Unprotected workers are not allowed to work in the affected area? Comments:			
15.48 If a foreseeable event such as maintenance takes place where the potential for a significant increase in exposure of workers to carcinogens or mutagens exists, does the facility initiate the following actions: [Royal Decree 665/1997, Article 7.2] - Avoid worker exposure by reducing the amount of time a worker spends in the affected workplace; - Adopt additional safety measures, including the provision of protective clothing and individual respiratory protection equipment to the concerned workers and which they are required to wear; and - Prohibit entry into the affected work area by unprotected workers? Comments:			
15.49 If carcinogens or mutagens are used in the workplace, does the facility ensure that the following information is available to be furnished to health and labor authorities upon their request: [Royal Decree 665/1997, Article 10] <RECORD KEEPING> - The result of the risk assessment, including the nature, degree and duration of exposure, and the assessment criteria and methods used; - The activities and industrial processes involving carcinogenic or mutagens agents, including a justification for the use of carcinogenic agents in these activities and processes; - The number of exposed workers, and the updated list of workers (specified above); - The preventive measures adopted and the type of protective equipment used; - The criteria used for and result of any substitution of carcinogenic or mutagens agents; and - Any case of worker cancer resulting from workplace exposure? See protocol for notes.			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
Comments:			
Exposure to Biological Agents			
See protocol for notes.			
15.50 If any biological agents are used at the facility, has the facility conducted an evaluation of any workers affected by such exposure? [Royal Decree 664/1997, Article 4] See protocol for notes. Comments:			
15.51 If the results of the evaluation indicate a risk to the health and safety of any workers caused by an exposure to biological agents (Group 2, 3 and 4 specified in Annex II of Royal Decree 664/1997), are the following requirements met: [Royal Decree 664/1997, Article 6] – The exposure is avoided; and – If the elimination of the exposure is not possible, due to technical reasons, the risk of exposure is reduced to the lowest possible level, which sufficiently guarantees the health and safety of the affected workers? See protocol for notes. Comments:			
15.52 If a health and safety risk exists at the facility, as a consequence of work with biological agents, does the facility adopt measures that provide the following: [Royal Decree 664/1997, Article 7] – Prohibit workers from eating, drinking or smoking in the work zones where said risk exists; – Provide workers with appropriate protective garments, or other types of specialized, adequate garments; – Provide toilets, as well as appropriate and adequate bathrooms that are equipped with ocular cleaning products and dermal antiseptics; – Provide a specific location for the adequate storage of protective equipment, and ensure it is clean and in good working condition, prior to use (if possible) as well as after use;			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
– Provide specified procedures for retrieving, handling and processing biological agent samples; – Provide workers with ten minutes for personal hygiene, both prior to eating and after completing such work; – Ensure that upon exiting the relevant work zone all workers remove work clothes and personal protective equipment that could be contaminated by biological agents, and that these clothes and equipment are stored in areas separate from any other garments; and – Prohibit workers from taking used work garments home, and ensure that any such garments are sent out of the facility (for disposal) in closed receptacles with affixed labels specifying appropriate warnings (see Annex III of Royal Decree 664/1997)? Comments:			
15.53 If any workers at the facility are subject to the risk from biological agents, are these workers provided with medical monitoring that is adequate for, and specific to, the risk from biological agents, and in accordance with the following schedule: [Royal Decree 664/1997, Article 8] – Prior to any exposure; – At regular, successive intervals, with the schedule specified by the relevant Doctor (consideration must be given to the specific biological agent in question, the type of exposure, and the available effective tests for providing early detection); and – If any worker subject to the specified exposure has contracted an infection or illness that could be caused by the exposure to biological agents? See protocol for notes. Comments:			
15.54 Does the facility ensure that the following documentation is kept at the facility in an updated form: [Royal Decree 664/1997, Article 9] <RECORD KEEPING> – Risk evaluation results, as well as the criteria and procedures for the evaluation and the methods used for monitoring, analysis and testing; – A listing of the names of the workers exposed to any Group 3 and Group 4 biological agents, indicating the type of work conducted and the biological agents the workers were exposed to, as well as a register of the corresponding exposures, accidents and incidents; and – Medical history of any worker subject to medical monitoring (as specified above in Question 15.53)?			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
See protocol for notes.			
Comments:			
15.55 Does the facility notify the labor authority at least 30 days prior to conducting work with Group 2, 3 or 4 biological agents? [Royal Decree 664/1997, Article 10] See protocol for notes.			
Comments:			
15.56 Does the facility provide the following to the labor and the sanitation authorities: [Royal Decree 664/1997, Article 11] – Information pertaining to any accident or incident that caused a release of any biological agent and that can cause a severe infection or illness to humans; – Information pertaining to all cases of illness and death caused by an exposure to biological agents; – If the facility has ceased all activities related to the exposure to biological agents, copies of the following: – The listing of the names of the workers exposed to any Group 3 or 4 biological agents, indicating the type of work conducted and the biological agents relating to the exposure; and – The medical history of any worker subject to medical monitoring (as specified above)?			
Comments:			
Exposure to Legionella			
See protocol for notes.			
15.57 If the facility has any cooling towers or evaporative condensers, does it notify the competent health administration within a month of beginning operations and include the following details in the notification: [Royal Decree 865/2003, Article 3] – The number of installations and their specific locations; – Their technical characteristics (model, series number, year installed, ventilator voltage); – Water supply; and – Any modifications that may affect the system?			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
See protocol for notes. Comments:			
15.58 If the facility has any of the systems or installations listed in the note at the beginning of the subsection, does it have a periodic maintenance program, and does it complete structural and operational improvements that guarantee public health regarding the following: [Royal Decree 865/2003, Article 4] – Proper operation of the systems and installations; and – The microbiological and physio-chemical quality of the water? See protocol for notes. Comments:			
15.59 Does the facility ensure that records are kept of all maintenance operations on any systems or installations listed in the notes at the beginning of the subsection, including the following: [Royal Decree 865/2003, Article 5] <RECORD KEEPING> – Dates of improvement, cleaning and general disinfection tasks, details on the type of protocol followed, products used, dosages, actuation/reaction times; – If these maintenance operations are conducted by a contracted/external business or service provider, the contractor's corresponding cleaning and disinfection certification (using the form found in Annex 2 of the Royal Decree 865/2003); – Dates of any other type of maintenance (partial cleaning, repairs, verifications, greasing) and their specifications, as well as any incidents or methods adopted; – Dates and results of any analytical results for different water analyses; and – The signature of the technician responsible for the tasks performed, and of the person responsible for the facility? See protocol for notes. Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
15.60 Does the facility ensure that the health authorities are provided access in order to inspect its classified systems and installations (see the note at the beginning of the subsection) and to review their related maintenance programs and records? [Royal Decree 865/2003, Article 10] Comments:	☐	☐	☐
15.61 If the health authorities determine that actions must be taken (such as cleaning, disinfection and/or structural changes) to reduce the risk of Legionella, does the facility ensure that it complies with such actions? [Royal Decree 865/2003, Article 12] See protocol for notes. Comments:	☐	☐	☐
Exposure to Occupational Noise			
15.62 Has the facility conducted a noise evaluation of workers to determine if noise limits have been exceeded (as noted below)? [Royal Decree 286/2006, Article 6] See protocol for notes. Comments:	☐	☐	☐
15.63 Does the facility provide the following to the members of the in-house health and safety personnel and to any worker representatives: [Royal Decree 286/2006, Article 10] – Permission to be present when any noise evaluation is conducted; – Information pertaining to the results of any noise evaluation and permission to obtain any clarifications necessary for understanding the significance of the results; and – Information pertaining to preventive measures to be adopted, based on the results of the evaluation? Comments:	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
15.64 If the noise evaluation indicates that the daily equivalent level of a workplace exceeds 80 dBA, has the facility adopted the following measures: [Royal Decree 286/2006, Articles 6, 7 and 11] – Conducts periodical risk assessment and noise measurements, at least every three years; – Conducts initial hearing tests (prior to performing work related to noise exposure), as well as subsequent periodic hearing tests at least every five years; and – Provides hearing protection devices to any workers that request them? Comments:			
15.65 If the daily equivalent noise level in a workplace exceeds 85 dBA, are the preventive measures specified in Question 15.64 adopted with the following modifications: [Royal Decree 286/2006, Articles 6, 7 and 11] – The periodical risk assessment and noise measurements are conducted at least annually; – The periodic hearing tests are conducted at least every three years; and – All exposed workers are provided with hearing protection? Comments:			
15.66 If the daily equivalent noise level in a workplace exceeds 87 dBA, or if the peak level exceeds 140 dBA, is compliance with the following requirements achieved: [Royal Decree 286/2006, Article 8] – The facility takes immediate actions to reduce and maintain noise levels below 87 dBA; – The facility analyzes the causes for these exceedances and implements a program specifying techniques to diminish noise generation or propagation; and – All affected workers and worker representatives, as well as any in-house health and safety personnel, are informed of any such causes and any abatement techniques to be initiated? See protocol for notes. Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
Exposure to Mechanical Vibrations			
See protocol for notes.			
15.67 Has the facility conducted an evaluation of the workplace to determine if workers are exposed to mechanical vibrations, and to determine if exposure levels (as addressed in the notes to this question) have been exceeded? [Royal Decree 1311/2005, Article 4] See protocol for notes. Comments:			
15.68 If the results of measurements/monitoring of mechanical vibration levels indicate that the daily equivalent level of a workplace exceeds 2.5 m/s ² for hand-arm vibration or 0.5 m/s ² for whole-body vibration, does the facility established and implemented the following measures: [Royal Decree 1311/2005, Article 5.2] – The facility has established and implemented a program of technical and/or organizational measures intended to reduce to a minimum the exposure to mechanical vibration and the associated risks, taking the following into account: – Other working methods that require less exposure to mechanical vibration; – The choice of appropriate work equipment of appropriate ergonomic design, taking into account the work to be done, that produces the least possible vibration; – The provision of auxiliary equipment that reduces the risk of injuries caused by vibration, such as seats that effectively reduce whole-body vibration and handles which reduce the vibration transmitted to the hand-arm system; – Appropriate maintenance program for work equipment, the workplace and workplace systems; – Limitation of the duration and intensity of the exposure; – Appropriate work schedules with adequate rest periods; and – The provision of clothing to protect exposed workers from cold and damp; and – The facility ensures the appropriate health surveillance of workers based on the outcome of the risk assessment provided (and as further addressed in notes to Question 15.69)? Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
15.69 If the measurement results for mechanical vibration levels indicate that the daily equivalent level of a workplace exceeds 5 m/s² for hand-arm vibration or 1.15 m/s² for whole-body vibration, does the facility meet the following requirements: [Royal Decree 1311/2005, Article 5.3] – Takes immediate actions to reduce exposure below the exposure limit value; – Analyzes the reasons why the exposure limit value has been exceeded; and – Implements the protection and prevention measures, accordingly, to prevent the exposure limit value from being exceeded again? Comments:			
See protocol for notes.			
Exposure to Radioactive Substances			
See protocol for notes.			
15.70 If the facility performs any of the activities listed in the notes at the beginning of this subsection, has it submitted a justification for such activities to the competent authority, and does it comply with any requirements established by the authority? [Royal Decree 783/2001, Article 4.1] See protocol for notes. Comments:			
15.71 Does the facility ensure that the effective dose limit for exposed workers does not exceed 100 millisieverts (mSv) in a consecutive five-year period, and a maximum effective dose of 50 mSv in any single year? [Royal Decree 783/2001, Article 9.1] See protocol for notes. Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
15.72 Does the facility prohibit the employment of any persons under 18 years of age from being assigned to any work that would result in their being classified as exposed workers (as defined in the notes to Question 15.71)? [Royal Decree 783/2001, Article 19] See protocol for notes. Comments:	☐	☐	☐
15.73 Does the facility ensure that the effective dose limit of exposure for trainees and students between the ages of 16 and 18 does not exceed 6 mSv in any single year? [Royal Decree 783/2001, Article 11.2] See protocol for notes. Comments:	☐	☐	☐
15.74 If any pregnant woman employed at the facility informs the facility of her condition, does the facility immediately thereafter ensure any such woman is not exposed to levels exceeding those for members of the public? [Royal Decree 783/2001, Article 10.1] See protocol for notes. Comments:	☐	☐	☐
15.75 Does the facility ensure that nursing mothers are not employed in work involving a significant risk (not defined) of radioactive contamination? [Royal Decree 783/2001, Article 10.2] See protocol for notes. Comments:	☐	☐	☐
15.76 Does the facility ensure protection of exposed workers is conducted as follows: [Royal Decree 783/2001, Article 15] – Prior evaluation is conducted to identify the nature and magnitude of the radiological risk to exposed workers and implementation of the optimization of radiation protection in all working conditions;	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
– Workplaces are classified into different areas, where appropriate, by reference to an assessment of the expected annual doses and the probability and magnitude of potential exposures; – Workers are classified into different categories according to their work conditions; – Control measures and monitoring relating to the different areas and working conditions, including where necessary, individual monitoring are implemented; and – Medical surveillance is implemented? Comments:			
15.77 If there exists the possibility of exposure to ionizing radiation in excess of 1 mSv per year or an equivalent dose of 1/10 of the dose limits for the lens of the eyes, skin and extremities (as specified in the note to Question 15.71), has the facility made a distinction between controlled areas and supervised areas? [Royal Decree 783/2001, Article 16] See protocol for notes. Comments:			
15.78 Do controlled areas at the facility meet the following requirements: [Royal Decree 783/2001, Article 18.1-18.2] – The controlled areas are delineated with adequate signage to indicate the existing exposure risks (as indicated in the notes below); – Access is restricted to individuals who have received appropriate instructions, and such areas are controlled in accordance with written procedures provided by the facility; – If a risk of radioactive exposure exists, the use of individual dosimeters is obligatory; and – If a risk of radioactive contamination exists, the use of PPE that is adequate for the existing risk is obligatory, and the exit from the area is equipped with detection devices that can check for contamination of persons and equipment? See protocol for notes. Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
15.79 Does the facility ensure that it performs dosimetric measurements of supervised areas in order to arrive at a specific estimate of the doses that may be received? [Royal Decree 783/2001, Article 18.3] See protocol for notes. Comments:	☐	☐	☐
15.80 If any exposed workers (as defined in the notes to Question 15.71) are employed at the facility, for the purpose of medical surveillance, has the facility classified workers as either Category A or Category B workers? [Royal Decree 783/2001, Article 20] See protocol for notes. Comments:	☐	☐	☐
15.81 Does the facility provide exposed Category A workers with the following individual monitoring provisions: [Royal Decree 783/2001, Article 28] – If the risk of exposure is external, the use of individual dosimeters that measure external doses, representative of the dose for the total organism during an entire work day; – If the risk of exposure is partial, or not homogeneous throughout the organism, use of dosimeters that are adequate to for the parts of the body that would be potentially most affected; and – In the case of internal contamination, the use of any relevant tests and analyses to evaluate the corresponding dose? Comments:	☐	☐	☐
15.82 Does the facility ensure that Category B workers are provided with monitoring that is, at a minimum, sufficient to demonstrate that such workers are correctly classified in Category B? [Royal Decree 783/2001, Article 29] See protocol for notes. Comments:	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
15.83 Has the facility written a protocol for the dosimetric systems (or instruments) and procedures used for monitoring areas and submitted a copy to the Nuclear Safety Council? [Royal Decree 783/2001, Article 31] Comments:	☐	☐	☐
15.84 In the case of an emergency exposure, does the facility comply with the following individual monitoring requirements: [Royal Decree 783/2001, Article 32] – Relevant doses and their distribution in the body are assessed; and – Individual monitoring or assessment of the individual doses is carried out as appropriate to the circumstances? See protocol for notes. Comments:	☐	☐	☐
15.85 Does the facility ensure that the exposure of classified workers (as indicated in Question 15.81 and Question 15.82) is monitored at least monthly for external exposure, and at an interval to be determined on a case by case basis for internal exposure? [Royal Decree 783/2001, Article 27.1] See protocol for notes. Comments:	☐	☐	☐
15.86 Does the facility ensure that it transmits the results of dosimetric monitoring to its prevention services department, so they can interpret the results from a health standpoint? [Royal Decree 783/2001, Article 27.3] Comments:	☐	☐	☐
15.87 Does the facility ensure that it complies with the following record keeping and notification requirements regarding dosimetric monitoring data: [Royal Decree 783/2001, Article 38] <RECORD KEEPING> – Records and notifications are made available to the competent authorities and the Nuclear Safety Council; and – Records and notifications are made available, as certified copies, to any worker(s) concerned?	☐	☐	☐

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
See protocol for notes. Comments:			
15.88 If the facility employs any Category A exposed workers, does it provide these workers with proper medical surveillance examinations as indicated in the Subsection entitled, "Medical Surveillance" and as follows: [Royal Decree 783/2001, Articles 40 and 41] – Provided prior to beginning the relevant work, prior to medical examination, or prior to classification as a Category A worker, in order to check that there is no reason that would legally prevent them from performing the work and to determine their work aptitude; and – Provided during periodic health reviews? See protocol for notes. Comments:			
15.89 Does the facility keep separate medical records for any Category A worker? [Royal Decree 783/2001, Article 44.1] <RECORD KEEPING> See protocol for notes. Comments:			
15.90 Does the facility consult qualified experts or the approved occupational health services, with respect to the examination and testing of protective devices and instruments for conducting measurements, and in accordance with the following: [Royal Decree 783/2001, Article 22] – Prior critical examination of plans for installations from the point of view of radiation protection; – The acceptance into service of new or modified sources from the point of view of radiation protection; – Regular checks of the effectiveness of protective devices and techniques; and – Regular calibration of the instruments for measurements and regular confirmation that they are serviceable and correctly used? See protocol for notes.			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
Comments:			
15.91 If the facility has any external workers who perform work in controlled areas, does it ensure that the following requirements are met prior to the start of work: [Royal Decree 413/1997, Article 5] – The employer of the external workers is registered with the Register for External Companies ("Registro de Empresas Externas"); – The workers are medically approved for the work assigned; – The workers have received basic training pertaining to radiological protection; – The workers have been provided with information and training specific to the work and any work conducted in controlled areas; – The workers are subjected to individual dosimetry monitoring suited to the type of work; – The dosimetric data are complete and dosimetric conditions of the worker are adequate for the nature of the job; – For any work conducted, the workers are provided with personal protective equipment that must be used in the controlled area; and – Prior to completion of the work, any data referring to the work, the time frame, estimated operational dose resulting from dosimetric monitoring, and the internal dose determined is added to the worker's individual radiological monitoring documents? See protocol for notes. Comments:			
15.92 If natural radiation sources exist at the facility, does it perform a study to evaluate if there exists a significant increase in the risk of radiation exposure to workers or to members of the public that cannot be disregarded from the point of view of radiation protection? [Royal Decree 783/2001, Article 62.1] See protocol for notes Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	<u>Not Applicable</u>	<u>Complies</u>	<u>Does not Comply</u>
15.93 Does the facility comply with the following the Nuclear Safety Council inspection requirements: [Royal Decree 783/2001, Article 67] – Provides access to work areas, equipment and instrumentation; – Provides any information and documentation requested; and – Allows monitoring and/or sampling to take place? Comments:			
Nuclear or Radioactive Installations See protocol for notes.			
15.94 If the facility operates a nuclear or radioactive installation, does it possess the appropriate approval from the Ministry of Industry and Energy and the Nuclear Safety Council, or from the competent authority of the relevant Autonomous Community (if functions have been transferred to the regional authority)? [Royal Decree 1836/1999, Articles 1 through 4] See protocol for notes. Comments:			
15.95 If the facility performs any of the following activities, has it obtained authorization from the General Directorate of Energy and the Nuclear Safety Council, and does it comply with the conditions set forth in the authorization: [Royal Decree 1836/1999, Article 74] – The manufacture of devices, equipment and accessories that incorporate radioactive materials or ionizing radiation, although the use thereof is within the exemptions provided in Annex I of Royal Decree 1836/1999; – The introduction into the Spanish market of consumer products incorporating radioactive materials, although the use thereof is within the exemptions provided in Annex I; – The marketing of radioactive materials and appliances, equipment, fixtures or other components (other than the consumer products described in the previous bullet) which incorporate radioactive materials or ionizing radiation, although the use thereof is within the exemptions set out in Annex I; – The transfer of radioactive material for which it does not hold an authorization; and – Technical maintenance/repairs of radioactive devices and equipment that generate ionizing radiation?			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
Comments:			
15.96 Does the facility ensure that supervisors and operators of any radioactive installations (as noted below) are licensed by the Nuclear Safety Council (NSC) for the type of radioactive installations operated, and for the type of activities performed? [Instruction IS-07/2005, First Article] See protocol for notes. Comments:			
15.97 If the facility has workers that perform marketing activities or technical assistance for the types of equipment and installations referenced in the notes to Question 15.96, do they have licenses that correspond to the category of work for the radiation equipment involved? [Instruction IS-07/2005, Sixth Article] Comments:			
15.98 If the facility has an investigative or instructive radiation installation where more than 50 employees use radioactive materials and/or the number of locations where radioactive isotopes are handled is more than 10, does it have an in-house Radiological Protection Service? [Instruction IS-08/2005, Third Article, 3)a)] See protocol for notes. Comments:			
15.99 If the facility is required by the NSC to contract an in-house Radiological Protection Service, did it receive an authorization for the Service, with regard to its personnel, technical methods and documentation, within one year of notification of the requirement (or by 6 October 2006 for those facilities indicated in Question 15.98)? [Instruction IS-08/2005, Fourth Article, 3) paragraph 1] Comments:			

	<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
	Not Applicable	Complies	Does not Comply
15.100 If the facility is required by the NSC to contract an external Radiological Technical Protection Unit, did it engage in a contract for this service within 3 months of notification of the requirement? [Instruction IS-08/2005, Fourth Article, last paragraph] Comments:	☐	☐	☐
15.101 Comments:	☐	☐	☐
15.102 Comments:	☐	☐	☐
15.103 Comments:	☐	☐	☐

To sort QC results, please use the Sort By options

located on the Audit Quick Check Toolbar

Be sure your cursor is within the checklist before using this option.

16.0 CHEMICAL MANAGEMENT

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

– I. Hazardous Substances - Licenses and Permits	16-11
– II. Hazardous Substances - Labeling and Storage	16-13
– III. Hazardous Substance Control - General	16-13
– IV. Hazardous Substance Control - Chemical Industry	16-19
– V. Hazardous Substance Control - Metalworking Industry	16-27
– VI. Hazardous Substances - Emergency Response and Contingency Planning	16-28
– VII. Toxic Substances	16-31
– VIII. Hazardous Substances - Piping and Equipment	16-32
– IX. Flammable and Combustible Liquids - General Storage	16-32
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– XI. Flammable and Combustible Liquids - External and Outdoor Storage	16-49
– XII. Chemical/Oil Storage	16-53
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– XXI. Biological Agents and Toxins	16-76
– XXII. Material Safety Data Sheets	16-79

Tables or Appendices referenced in the protocol are located at the end of this section, along with a link to our audit scorecard, entitled [Audit Quick Check](#). This protocol applies to facilities located throughout Singapore.

Key Legislation and Regulations

Key legislation and regulations covered in this protocol section are noted as follows:

Primary Legislation

- **Prevention of Pollution of the Sea Act (Act No. 18 of 1990), 1999 Revised Edition, last amended by the Merchant Shipping (Civil Liability and Compensation for Bunker Oil Pollution) Act 2008 (Act No. 24 of 2008), 1990 (1999 Revised Edition) as amended through 2008.** This Act makes provisions for the prevention of pollution of Singapore waters and addresses emergency response issues relating to spills.
- **Control of Plants Act (Act No. 18 of 1993), 2000 Revised Edition, 1993 (2000 Revised Edition).** This Act establishes requirements for the cultivation, import, transshipment and export of plants and plant products, the protection of plants and plant products against pests and diseases, the control of the introduction of pests into Singapore, and the use of pesticides.
- **Fire Safety Act (Act No. 39 of 1993), 2000 Revised Edition, last amended by the Building Maintenance and Strata Management Act 2004 (Act No. 47 of 2004), 1993 (2000 Revised Edition) as amended through 2004.** This Act sets forth the requirements for fire safety in all areas of industry. The requirements for the handling and storage of petroleum are covered in this protocol section. The 2004 amendment repeals the *Petroleum Act*.
- **Environmental Protection and Management Act (Act No. 9 of 1999), last amended by the Environmental Protection and Management Act (Amendment of Second Schedule) Order 2009, No. S. 62/2009, 1999 (2002 Revised Edition) as amended through 2009.** This is the main Act for pollution control. It governs air, water, hazardous substance control, licenses, industrial plant works, enforcement, compensation, damages, fees, costs and expenses. It specifies what scheduled premises are and contains requirements for the control of pollution from these premises as well as from other industrial premises. It is a consolidation of assorted laws under the *Clean Air Act* and the *Water Pollution Control and Drainage Act* (since repealed). There are numerous subsidiary laws passed under this Act. Note that this Act was formerly known as the *Environmental Pollution Control Act*.

- **Biological Agents and Toxins Act (Act No. 36 of 2005), 2006 Revised Edition, last amended by the Biological Agents and Toxins Act (Amendment of First and Second Schedules) Order 2009, No. S. 573/2009, 2005 (2006 Revised Edition) as amended through 2009.** This Act sets forth requirements for the transport, handling and disposal of biological agents and toxins. It also prohibits the use of biological agents and toxins for certain purposes.
- **Workplace Safety and Health Act (Act No. 7 of 2006), last amended by the Statutes (Miscellaneous Amendments) Act 2010 (Act No. 4 of 2010), 2006 as amended through 2010.** This Act repeals and re-enacts with amendments the *Factories Act*, 1998 Revised Edition. This Act governs safety, health and welfare of persons at work in workplaces.
- **Radiation Protection Act 2007 (Act No. 27 of 2007), 2008 Revised Edition, 2007 (2008 Revised Edition).** This Act repealed and re-enacted with amendments the *Radiation Protection Act (Act No. 8 of 1991)*. This Act controls and regulates the importation, manufacture, sale, disposal, transport, storage, possession and use of radioactive materials and irradiating apparatus. It also provides for occupational health and safety of those working with radioactive materials or irradiating apparatus. There are also provisions for the disposal of radioactive waste.

Subsidiary Legislation

Note that legislation issued under the now repealed *Factories Act* is in force under the new [Workplace Safety and Health Act](#) until it is revoked or repealed. [[Workplace Safety and Health Act, Section 67\(14\)](#)] Legislation made under the repealed *Radiation Protection Act* (Act No. 8 of 1991) and in force immediately before 1 July 2007 continues in force as if made under the [Radiation Protection Act 2007](#), so far as it is not inconsistent with that Act. [[Radiation Protection Act 2007, Section 45\(5\)](#)]

- **Radiation Protection (Non-Ionising Radiation) Regulations, No. S. 479/91, last amended by the Radiation Protection (Non-Ionising Radiation) (Amendment) Regulations 2005 (No. S. 429/2005), 1991 as amended through 2005.** These Regulations specify the irradiating apparatus subject to licensing and control under the *Radiation Protection Act (Cap 262)*.
- **Prevention of Pollution of the Sea (Reporting of Pollution Incidents) Regulations, S. No. 60/1991, 2001 Revised Edition, 1991 (2001 Revised Edition).** These Regulations require reporting of certain chemical and petroleum spills into the sea.

- **Environmental Protection and Management (Hazardous Substances) Regulations, No. S. 159/99, last amended by the Environmental Protection and Management (Hazardous Substances) (Amendment) Regulations 2009, No. S. 59/2009, 1999 as amended through 2009 (2009 Revised Edition).** These Regulations govern the transport, import, storage and sale of hazardous substances. These Regulations were renamed by the [Environmental Protection and Management Act](#).
- **Radiation Protection (Ionising Radiation) Regulations, No. S. 29/2000, 2001 Revised Edition, 2000 (2001 Revised Edition).** These Regulations cover storage, internal transport, and labeling of radioactive materials and sources.
- **Fire Safety (Petroleum and Flammable Materials) Regulations, No. S. 81/2005, last amended by the Fire Safety (Petroleum and Flammable Materials) (Amendment) Regulations 2006, No. S. 625/2006, 2005 as amended through 2006.** These Regulations set forth requirements for the storage and transport of petroleum and flammable materials.
- **Fire Safety (Petroleum and Flammable Materials) Exemption Order 2005, No. S. 82/2005, 2005.** This Order exempts facilities storing petroleum and flammable materials in quantities below a threshold from the licensing requirements of the [Fire Safety \(Petroleum and Flammable Materials\) Regulations](#).
- **Workplace Safety and Health (General Provisions) Regulations 2006, No. S. 134/2006, last amended by No. S. 609/2009, 2006 as amended through 2009.** These Regulations cover health and safety in the workplace, including chemical safety relating to equipment and certain processes.
- **Radiation Protection (Transit and Transshipment) (Exemption) Regulations 2007, No. S. 317/2007, 2007.** These Regulations exempt certain radioactive materials and irradiating apparatus from requiring licenses, if the materials or apparatus are brought into Singapore in transit or are part of the equipment of a vessel or aircraft coming into Singapore. These Regulations became effective on 1 July 2007.
- **Workplace Safety and Health (Safety and Health Management System and Auditing) Regulations 2009, No. S. 607/2009, 2009.** These Regulations replace and expand on certain provisions formerly in the [Workplace Safety and Health \(General Provisions\) Regulations 2006](#). The Regulations require the implementation of safety and health management systems and regular audits for construction projects and specified types of industries.

- **Workplace Safety and Health (Approved Codes of Practice) Notification 2010, No. S. 117/2009, 2009.** This Notification replaces the *Workplace Safety and Health (Approved Codes of Practice) Notification 2007*. It specifies approved codes of practice and Singapore Standards enforceable under the [Workplace Safety and Health Act](#).

Mandatory Codes of Practice and Standards

The 2010, the [Workplace Safety and Health \(Approved Codes of Practice\) Notification 2010](#) (issued under the [Workplace Safety and Health Act](#)) lists mandatory codes of practice and Singapore Standards. Codes of practice and Singapore Standards may be purchased at the following website (last accessed in August 2010): <http://www.singaporestandardseshop.sg/product/Home.aspx>. Relevant codes of practice and standards specified by the [Workplace Safety and Health \(Approved Codes of Practice\) Notification 2010](#) are listed below, as well as other codes of practice mandatory under legislation.

While [SS 586:2008](#) is not specifically cited in legislation, the [Environmental Protection and Management \(Hazardous Substances\) Regulations](#) and the [Workplace Safety and Health Act](#) require that facilities observe the requirements of approved codes of practice for design and maintenance of containers and equipment for the transport and storage of hazardous substances, and for the labeling of hazardous substances imported into Singapore. [[Environmental Protection and Management \(Hazardous Substances\) Regulations, Regulations 4, 13, 15 and 19](#)]

- **CP 27:1999 - Code of Practice for Factory Layout - Safety, Health and Welfare Considerations, last amended September 2003, 1999 as amended through September 2003.** This Code provides guidelines on safety, health and welfare that must be taken into consideration when planning factory layout.
- **Code of Practice on Pollution Control, Ministry of the Environment and Water Resources, Pollution Control Department, 3rd Ed. February 2001, last amended in February 2009, February 2001 as amended through February 2009.** This Code contains provisions regarding chemical and oil storage.
- **SS 506-3:2006 - Occupational Safety and Health (OSH) Management System - Requirements for the Chemical Industry, 2006.** This Standard establishes the model for the establishment, implementation and maintenance of safety management systems for the chemical industry. It replaces the *Code of Practice on Safety Management System for the Chemical Industry*.

- **SS 532:2007 - Code of Practice for the Storage of Flammable Liquids, 2007.** This Code is a revision of *CP 40:1987 - Code of Practice for the Storage of Flammable and Combustible Liquids*, which has been renumbered as SS 532:2007. This Code covers requirements for storage and labeling of flammable liquids. It is considered an approved code of practice, as specified under Part VI of the Fire Safety (Petroleum and Flammable Materials) Regulations, to enable Qualified Persons to design, install and maintain equipment involving flammable liquids in accordance with the Fire Safety Act and its regulations.
- **SS 586:2008 – Hazard Communication for Hazardous Chemicals and Dangerous Goods, 2008.** This Standard implements the Globally Harmonised System, specifies Singapore variations on the United Nations Recommendations, and gives recommendations for the preparation, review, issue and use of safety data sheets (SDS). It covers the responsibility of suppliers and manufacturers of chemical substances, as well as that of users to make use of the information in the SDS to prevent unnecessary exposure to hazardous substances. The Standard also includes instructions for the compilation and completion of an SDS.

Notes: SS 586:2008 is divided into three parts, as follows:

- *SS 586-1:2008 – Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods - Transport and Storage of Dangerous Goods;*
- *SS 586-2:2008 - Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods - Globally Harmonized System of Classification and Labeling of Chemicals - Singapore's Adaptations; and*
- *SS 586-3:2008 - Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods - Preparation of Safety Data Sheets (SDS).*

Other Codes of Practice and Guidelines

The 2010, the Workplace Safety and Health (Approved Codes of Practice) Notification 2010 (issued under the Workplace Safety and Health Act) lists mandatory codes of practice and Singapore Standards. Codes of practice and Singapore Standards may be purchased at the following website (last accessed in August 2010): <http://www.singaporestandardseshop.sg/product/Home.aspx>. Relevant codes of practice and standards specified by the Workplace Safety and Health (Approved Codes of Practice) Notification 2010 are listed below, as well as other codes of practice mandatory under legislation.

While [SS 286:1984](#) – *Specification for Caution Labelling for Hazardous Substances* and [CP 61:1994](#) – *Code of Practice for Packaging and Containers for Hazardous Substances* are not specifically cited in legislation, the [Environmental Protection and Management \(Hazardous Substances\) Regulations](#) and the [Workplace Safety and Health Act](#) require that facilities observe the requirements of approved codes of practice for design and maintenance of containers and equipment for the transport and storage of hazardous substances, and for the labeling of hazardous substances imported into Singapore. [[Environmental Protection and Management \(Hazardous Substances\) Regulations, Regulations 4, 13, 15 and 19](#)]

Singapore Standard [SS 286:1984](#) – *Specification for Caution Labelling for Hazardous Substances* and [CP 61:1994](#) – *Code of Practice for Packaging and Containers for Hazardous Substances* continue in force until the new [SS 586:2008](#), Parts 1, 2 and 3, implementing the Globally Harmonized System for the Classification and Labelling of Chemicals, come into force. [SS 586:2008](#) will be implemented according to the following timeline:

- Applies to manufacturers and suppliers by 2010 for single substances and by 2012 for mixtures;
- Applies to end users for single substances by the end 2011, and for mixtures by the end 2013; and
- Applies to Transport Emergency Information Panels within 2 years for replacement of existing SS 286 compliant transport emergency information panels (end of 2010).

See Section 14.0 of this protocol for information from [SS 586:2008](#).

- **CP 61:1994 - Code of Practice for Packaging and Containers for Hazardous Substances, Parts 1 - 3, 1994.** This Code of Practice gives requirements for containers and vehicles transporting hazardous substances. While specific requirements for many individual substances are listed in the Code of Practice, only the general requirements are covered in this protocol. As discussed above, this Code of Practice will be withdrawn and replaced by [SS 586:2008](#). Code of Practice [CP 61:1994](#) contains the following parts: Part 1:1994 - List of Commonly Used Hazardous Substances; Part 2:1994 - Packaging Requirements for Hazardous Substances; and Part 3:1994 - Tank Requirements for Hazardous Substances.
- **SS 286:1984 - Specification for Caution Labelling for Hazardous Substances, Parts 1 - 5, 1984.** This Standard covers labeling of hazardous substances for transport, including hazard labeling of packages, containers, and vehicles. As discussed above, this Standard will be withdrawn and replaced by [SS 586:2008](#). Standard [SS 286:1984](#) contains the following parts: Part 1:1984 -- Classification and Class Labels for Hazardous Substances;

Part 2:1984 -- United Nations Substance Identification Numbers; Part 3:1984 -- HAZCHEM Emergency Action Code; Part 4:1984 -- Marking of Packages, Containers and Vehicles; and Part 5:1984 -- NFPA Hazard Identification System

- **CP 34:1985 - Code of Practice for Bulk Liquid Oxygen Storage Installations on User Premises, 1985.** This Code covers installations, operation and maintenance for liquid oxygen storage systems.
- **Guidelines on the Preparation of Material Safety Data Sheets (MSDS), 1995, 1995.** These Guidelines provide information regarding the format and type of information that must be included in any MSDS. They were prepared by the Department of Industrial Health, Ministry of Labor (now the Ministry of Manpower).
- **CP 12: Part 2:1998 - Code of Practice on The Filling, Inspection, Testing and Maintenance of Containers for the Storage and Transport of Compressed Gases, Part 2: Containers for Dissolved Acetylene Gas, 1998.** This Code specifies the requirements for the inspection and maintenance of transportable dissolved acetylene containers (cylinders).
- **CP 12: Part 1:2000 - Code of Practice on The Filling, Inspection, Testing and Maintenance of Containers for the Storage and Transport of Compressed Gases, Part I: Seamless Metal Containers for Gases, Excluding Dissolved Acetylene, 2000.** This Code specifies the requirements for the inspection and maintenance of transportable seamless metal gas containers (cylinders) of one liter water capacity and above.
- **Guidelines on the Implementation of Safety Management System for the Metalworking Industry, July 2001, July 2001.** These Guidelines were jointly developed by the Metalworking Industry Safety Promotion Committee, and the Occupational Safety Department and Occupational Safety and Health (Training and Promotion) Center, Ministry of Manpower.
- **Safety Audit Scheme on Management of Hazardous Substances, Revised Edition, 2001, Pollution Control Department, Ministry of the Environment, last revised August 2008, 2001 Revised Edition as revised through August 2008.** This Scheme covers approvals for auditing teams, recommended formats and requirements for audit reports. Note that the Scheme is no longer available as a separate document, but can be accessed on the National Environmental Agency of Singapore's website in substantially the same format as the original document.

- **Guidelines for Quantitative Risk Assessment (QRA) Study (for Installations which Store, Transport or Use Hazardous Substances), Pollution Control Department of the Ministry of the Environment, last revised in April 2008, 2008 Revised Edition.** These Guidelines assist facilities in conducting an evaluation to identify causes of possible accidents to determine the likelihood of the occurrence and potential consequences of accidents involving the storage, transport or use of hazardous substances.

This protocol section updates information contained in the prior version (2008). Specific additions, deletions, and other changes made relative to this earlier version of the protocol are summarized in Appendix 16-A.

Topics and Questions

Notes: Throughout this section, several Singapore Standards (SS) and Codes of Practice (CP) are referenced. These Standards and Codes may be purchased at the Spring Singapore website (last accessed in August 2010) at: <http://www.singaporestandardseshop.sg/product/Home.aspx>.

This section covers licensing, storage requirements, labeling, and emergency and contingency planning. The following topics relating to management of chemicals are covered under other sections of this protocol, as follows:

- Fire safety requirements are covered under Section 13.0 of this protocol;
- Transport of hazardous substances is covered under Section 14.0 of this protocol; and
- Industrial hygiene requirements are covered under Section 15.0 of this protocol.

The following terms are used in this protocol section: [*Environmental Protection and Management Act, Section 2*]; [*Environmental Protection and Management (Hazardous Substances) Regulations, Section 2*] and [*Fire Safety Act, Section 2*]

- “Code of Practice” means a standard which:
 - Sets out the method of installation of equipment and the procedure to be followed for the efficient use and maintenance of such equipment;
 - Recommends precautions to be taken in making, using and maintaining such equipment; or
 - Specifies the measures or precautions to be taken to ensure compliance with respect to the design and plans for, and construction of, such equipment;
- “Commissioner” means the Commissioner of the Singapore Civil Defence Force;
- “Director” refers to the Director-General of Environmental Protection; and
- “PCD” refers to the Pollution Control Department of the Ministry of the Environment.

The term “hazardous substance” is defined differently for different pieces of legislation (e.g., the *Workplace Safety and Health Act* and the *Environmental Protection and Management Act*). The term is defined in each subsection of this protocol section according to the definition applicable to the subsection. Most of the subsections in this protocol section cover the requirements of the

Environmental Protection and Management Act and its regulations. Only the Subsections entitled “Material Safety Data Sheets” and “Hazardous Substances - Piping and Equipment” cover requirements from the Workplace Safety and Health Act and its regulations.

I. Hazardous Substances - Licenses and Permits

Notes: The term “authorized to store” a hazardous substance refers to those authorized under either a license or a permit. [Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 17(2)]

“Hazardous substance” under the Environmental Protection and Management Act and its regulations means any of the substances specified in the first column of Part I of the Second Schedule of the Environmental Protection and Management Act (see Appendix 5-B in Section 5.0 of this protocol), except when the substance meets one of the following conditions: [Environmental Protection and Management Act, Section 2]

- Is contained in any substance, preparation or product specified in the second column of Part I corresponding to that substance; or
- Is contained in any substance, preparation or product specified in Part II of the Schedule.

16.1 If the facility uses or stores hazardous substances on-site in quantities greater than the exempt amount listed in Appendix 14-B in Section 14.0 of this protocol, has it received a permit from the Director authorizing such storage? [Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 17(1)]

Notes: A permit to use and store hazardous substances is valid for the time period specified on the permit. [Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 17(3)]

16.2 Is the use and storage of hazardous substances conducted in accordance with the conditions specified in the facility’s permit? [Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 17(5)]

16.3 If the facility is authorized to store hazardous substances, does it ensure that each employee and person authorized to handle hazardous substances on site has received instruction and training to enable them to understand the nature of the dangers of all hazardous substances being stored and the emergency action plan to be implemented in the event of any accident or emergency involving any hazardous substance stored? [Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 20]

- 16.4** If the facility sells or offers for sale, imports or exports a hazardous substance as listed in Appendix 5-B in Section 5.0 of this protocol, does it have a license to do so? [\[Environmental Protection and Management Act, Section 22\]](#)

Notes: Substances on the schedule require a license for importation, sale, or possession for sale, unless they are listed in the Exclusions column or Part I or in the General Exemptions of Part II. [\[Environmental Protection and Management Act, Sections 21 and 22\]](#).

- 16.5** Does the facility ensure that the importation, sale, or possession of a licensed hazardous substance is conducted in accordance with the specified conditions of the license? [\[Environmental Protection and Management Act, Section 23\(1a\)\]](#)

- 16.6** Does the facility ensure that any sale of a licensed hazardous substance is conducted by or under the personal supervision of the person named in the license? [\[Environmental Protection and Management Act, Section 23\(1b\)\]](#)

- 16.7** Does the facility ensure that any agent or employee of the facility involved in storing, using or otherwise dealing with any licensed hazardous substance takes care to deal with the hazardous substance in a manner so as not to threaten the health or safety of any person, or to cause pollution of the environment? [\[Environmental Protection and Management Act, Section 24\(1\)\]](#)

Notes: Any person who has had a hazardous substance in their possession or under their control is assumed to have done so knowingly until proven otherwise. [\[Environmental Protection and Management Act, Section 24\(2\)\]](#)

- 16.8** Does the facility ensure that no hazardous substances are sold or supplied to any person who is not authorized to store hazardous substances (except for export of hazardous substances from Singapore)? [\[Environmental Protection and Management \(Hazardous Substances\) Regulations, Regulation 21\(1-2\)\]](#)

- 16.9** If the facility has a license or permit to store or use hazardous substances, does the facility keep records of all arrivals, sales and supplies of hazardous substances, as well as any inventory records required? [\[Environmental Protection and Management \(Hazardous Substances\) Regulations, Regulations 18\(a\) and 21\(3\)\]](#)

Notes: The Director may specify the form and content of the records in the permit or license for storage and use or sale of hazardous substances. [\[Environmental Protection and Management \(Hazardous Substances\) Regulations, Regulations 18\(a\) and 21\(3\)\]](#) and [\[Environmental Protection and Management Act, Section 23\(1c\)\]](#)

- 16.10** If the facility is authorized to store a hazardous substance, does it ensure that the substance is stored only for the purpose(s) stated in the permit? [*Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 18(b)*] and [*Environmental Protection and Management Act, Section 23(2)*]

II. Hazardous Substances - Labeling and Storage

- 16.11** Does the facility ensure that hazardous substances are only stored in containers in an area to which only authorized personnel have access? [*Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 19(b)*] and [*Environmental Protection and Management Act, Section 23(2)*]
- 16.12** Are storage areas for hazardous substances equipped with containment as well as disposal facilities to deal with any accidental release of hazardous substances? [*Code of Practice on Pollution Control, Section 5(a)(ii)*]
- 16.13** Are all containers that are used for the storage of hazardous substances constructed and inspected in accordance with internationally acceptable standards and affixed with labels approved by the Director? [*Code of Practice on Pollution Control, Section 5(a)(i)*] and [*Environmental Protection and Management (Hazardous Substances) Regulations, Regulations 15 and 19(a) and (c)*]

Notes: Some of these internationally acceptable standards include, but are not limited to standards such as the IMDG, ADR and Singapore's *SS 586:2008 – Hazard Communication for Hazardous Chemicals and Dangerous Goods*. However, design and construction criteria of containers are beyond the scope of this protocol and therefore, have not been covered.

III. Hazardous Substance Control - General

Notes: This subsection applies to hazardous substances requiring a permit for storage and use, and to those requiring a license for import/export or sale. See the Subsection entitled “Hazardous Substances - Licenses and Permits” above.

“Hazards” includes potential threats to health or safety of persons, as well as potential pollution of the environment.

The Pollution Control Department (PCD) licenses the import, sale, storage, transportation and use of hazardous chemicals. Besides regulatory controls, several other safety programs under the PCD, the Singapore Civil Defence Force, and the Ministry of Manpower involving hazardous substances are covered in this subsection:

- *Safety Audit Scheme for Management of Hazardous Substances* requires review of management practices involving hazardous substances (see http://app2.nea.gov.sg/haz_sub_audit.aspx, last accessed in September 2010); and
- *Guidelines for Quantitative Risk Assessment (QRA) Study (for Installations Which Store, Transport or Use Hazardous Substances)* provides information to identify and quantify hazards and risks relating to use, storage, and transport of hazardous substances, and to facilitate development of emergency response plans (see http://www.nea.gov.sg/cms/pcd/qra_guidelines.pdf, last accessed in August 2010).

Companies using the Safety Audit Scheme can either conduct their own safety audit studies in-house or engage accredited consultants to do so on their behalf. Companies that will be conducting safety audits for the first time are advised to engage a consultant who is accredited by the Ministry of the Environment. [[*Safety Audit Scheme on Management of Hazardous Substances, Sections 4-5*](#)] and [[*Code of Practice on Pollution Control, Section 5\(b\)*](#)]

Some requirements under the Ministry of Manpower's Safety Management Scheme (MOM-SMS) duplicate elements of the Safety Audit (NEA-SA) requirements of the National Environmental Agency. The National Environmental Agency has issued a statement that industries covered under both schemes are not required to carry out a safety audit for NEA separate from the SMS audit for the Ministry of Manpower, subject to the following considerations: (http://app2.nea.gov.sg/haz_sub_audit.aspx, last accessed in September 2010)

- Industries must engage 3rd party auditors registered with both Ministry of Manpower and National Environmental Agency or 2nd party auditors from their companies' corporate headquarters, with the approval of both the Ministry of Manpower and the National Environmental Agency to carry out the SMS audits once every 2 years; and
- The SMS reports must be submitted to the Ministry of Manpower, with a copy to the National Environmental Agency. The National Environmental Agency has indicated that it will accept MOM-SMS as NEA-SA.

16.14 If the facility uses the Safety Audit Scheme, does it conduct a safety audit every two years under the [*Safety Audit Scheme on Management of Hazardous Substances*](#)? [[*Safety Audit Scheme on Management of Hazardous Substances, Section 3*](#)]

- 16.15** If the facility decides to use an in-house audit team, does it ensure that the following criteria are met: [\[Safety Audit Scheme on Management of Hazardous Substances, Section 5\]](#)
- The facility has received approval from the PCD prior to the audit to use an in-house audit team;
 - The team leader does not feel inhibited from disclosing strengths and weaknesses in the management of hazardous substances and in recommending necessary actions;
 - The team and team leader's skill and experience are appropriate; and
 - Top management submits a letter to the PCD stating that it has confidence in the skills and experience of the team and team leader and that it will act on their recommendations (where practicable)?
- 16.16** If the facility's in-house safety audit team conducts audits under the *Safety Audit Scheme for Hazardous Substances*, are the required training elements of the facility's program met, including the following: [\[Safety Audit Scheme on Management of Hazardous Substances, Section 6 and Annexes 1 through 4\]](#)
- Staff is informed of and adequately trained to safely manage any changes;
 - Effective training is provided to staff responsible for the handling and storage of hazardous chemicals that adequately covers the safety information and safe work practices involved;
 - The facility's training program ensures that staff are kept up to date on changes to the types and work procedures in the handling of the hazardous chemicals; and
 - Contractors that are engaged to handle hazardous chemicals, including transportation, are carefully selected, informed of their safety responsibilities and adequately trained to handle hazardous chemicals safely and to respond to emergencies?
- 16.17** Was a follow-up action plan specifying a date for compliance included in the Safety Audit Report? [\[Safety Audit Scheme on Management of Hazardous Substances, Section 6\]](#)

Notes: The NEA will arrange with the company for an inspection of compliance. [\[Safety Audit Scheme on Management of Hazardous Substances, Section 6\]](#)

16.18 Does the in-house safety audit team check all the required elements of the facility's program? [*Safety Audit Scheme on Management of Hazardous Substances, Section 7*]

16.19 If the facility has been required by the Director to conduct any pollution/hazard/risk impact study, has the facility prepared a report that covers the requirements outlined in the *Guidelines for Quantitative Risk Assessment (QRA) Study (for Installations which Store, Transport or Use Hazardous Substances)*? [*Guidelines for Quantitative Risk Assessment (QRA) Study (for Installations which Store, Transport or Use Hazardous Substances), QRA Report Requirements*]

Notes: The *Guidelines for Quantitative Risk Assessment (QRA) Study (for Installations which Store, Transport or Use Hazardous Substances)* (available at http://www.nea.gov.sg/cms/pcd/qra_guidelines.pdf, last accessed in August 2010) gives the Quantitative Risk Assessment (QRA) report requirements, a list of qualified consultants, worksheets and a schematic for conducting a quantitative risk assessment.

16.20 Has the facility submitted the QRA report to each of the following agencies for their information and comments: [*Guidelines for Quantitative Risk Assessment (QRA) Study (for Installations which Store, Transport or Use Hazardous Substances), QRA Submission*]

- National Environment Agency, Planning and Development Department;
- National Environment Agency, Pollution Control Department;
- Singapore Civil Defence Force, Fire Safety and Shelter Department;
- Singapore Civil Defence Force, HazMat Branch;
- Jurong Town Corporation, Land Resource Planning Department;
- Ministry of Manpower, Occupational Safety and Health Division; and
- Singapore Police Force, Security and Counter Terrorism Division?

Notes: Addresses for the above agencies can be found in the QRA Submission section of the *Guidelines for Quantitative Risk Assessment (QRA) Study (for Installations which Store, Transport or Use Hazardous Substances)*.

Submittal to the Jurong Town Corporation (JTC) Land Resource Planning Department is only required for proposed development on JTC's land. [[Guidelines for Quantitative Risk Assessment \(QRA\) Study \(for Installations which Store, Transport or Use Hazardous Substances\), QRA Submission](#)]

- 16.21** Following clearance of the QRA, has the facility developed an emergency response plan to mitigate all accident scenarios identified in the QRA study, and has the facility submitted the emergency response plan to the PCD for information and to the Singapore Civil Defence Force (HazMat Branch) for approval? [[Guidelines for Quantitative Risk Assessment \(QRA\) Study \(for Installations which Store, Transport or Use Hazardous Substances\), Other Requirements \(i\)](#)]

Notes: The facility may be required to conduct any of the following after clearance of the QRA by the Singapore Civil Defence Force: [[Guidelines for Quantitative Risk Assessment \(QRA\) Study \(for Installations which Store, Transport or Use Hazardous Substances\), QRA Report Requirements \(ii\)](#)]

- Safety review (HAZOP) to identify all feasible and practical safety/mitigation measures that should be incorporated into the detailed design (the HAZOP study must be submitted to the Ministry of Manpower, Occupational Safety Department);
- Fire safety study to identify fire prevention/detection/protection strategies and measures that should be incorporated into the detailed design (the fire safety study must be submitted to the Singapore Civil Defence Force, Fire Safety and Shelter Bureau); or
- Pollution impact study to:
 - Identify the sources of emission of air pollutants, discharge of trade effluent, generation of wastes and emission of noise; and
 - To propose measures to reduce pollution and to mitigate adverse pollution impact on surrounding land use (the pollution impact study must be submitted to the PCD).

- 16.22** If the facility has received a written notice from the Director requiring it to remove a hazardous substance to a disposal facility, has the facility achieved compliance with all conditions set forth in the notice? [[Environmental Protection and Management Act, Section 25](#)]

16.23 If the facility carries out any activities involving the storage, handling or use of hazardous substances, and it has received a written notice from the Director requiring it to conduct any of the following activities, has it achieved compliance with all conditions set forth in the notice: [Environmental Protection and Management Act, Section 26(1)]

- Identification of all possible potential hazards;
- Estimation of the frequency or probability of occurrence of the potential hazards identified;
- Quantification of the consequences and risk levels of such potential hazards;
- Evaluation of the effects of potential fires or other disasters including the potential for release of toxic materials or toxic combustion products and the potential for release of contaminated fire-fighting water into the environment; and
- Identification of all necessary preventive measures to avoid and control the hazards identified, and formulation of a program to implement these measures?

Notes: The Director may, by notice in writing, require the facility to do the following: [Environmental Protection and Management Act, Regulation 26(2)]

- Conduct a review and evaluation of any existing measures for the prevention, reduction or control of any potential hazard that may endanger public health or cause pollution of the environment for the purpose of ascertaining whether such measures are sufficient or effective;
- Submit for the Director's approval, within such time as specified, a proposal for the implementation of such new or additional measures for the prevention, reduction or control of any potential hazard that may endanger public health or cause pollution of the environment; and
- Implement any new or additional measures for the prevention, reduction or control of any potential hazard that may endanger public health or cause pollution of the environment as the Director may approve or specify.

The Director may, by notice in writing, require the following: [Environmental Protection and Management Act, Regulation 26(4)]

- Modification or addition to be made to the measures proposed by the facility to control potential hazards; or
- Further review and evaluation by the owner or occupier of the facility.

IV. Hazardous Substance Control - Chemical Industry

Notes: See Section 10.0 of this protocol, General Health and Safety, the Subsection entitled "Workplace Safety and Health Audits" for information on requirements to implement a general safety and health management system audits for facilities, including those that engage in the following: [\[Workplace Safety and Health \(Safety and Health Management System and Auditing\) Regulations 2009, Regulations 2 and 8, and Second Schedule\]](#)

- Any factory engaged in the processing or manufacturing of petroleum, petroleum products, petrochemicals or petrochemical products;
- Any premises where the bulk storage of toxic or flammable liquid is carried on by way of trade or for the purpose of gain and which has a storage capacity of 5,000 or more cubic meters for such toxic or flammable liquid; and
- Any factory engaged in the manufacturing of fluorine, chlorine, hydrogen fluoride or carbon monoxide, or of synthetic polymers.

The Ministry of Manpower has withdrawn the *Code of Practice on Safety Management System for the Chemical Industry* and issued a circular to the petrochemical industry indicating that mandatory audits on or after 1 July 2009 should be based on [SS 506-3:2006](#).

The requirements in this subsection apply to facilities that conduct activities involving hazardous substances, such as hazardous substance processing, bulk storage, manufacturing, handling, or bulk transport or transfer. [\[SS 506-3:2006, Section 1\]](#)

[SS 506-3:2006](#) requires implementation of a medical surveillance program, a hearing conservation program, and a respiratory protection program, but does not specify details. [\[SS 506-3:2006, Section 4.4.7\]](#) See the Standard for general program concepts, and see Section 15.0 of this protocol for general requirements relating to such programs.

For additional details that are referenced throughout this subsection, see [SS 506-3:2006](#) which is available for purchase through the SPRING Singapore website indicated in the introductory notes to this protocol section.

- 16.24** Has the facility established, documented and implemented an occupational safety and health (OSH) management system that includes a policy that it authorized and signed by the facility's most senior person? [\[SS 506-3:2006, Section 4.1\]](#)

16.25 Does the policy in Question [16.24](#) meet the following requirements: [[SS 506-3:2006, Section 4.2](#)] **<RECORD KEEPING>**

- Is appropriate for the nature and scale of the facility's OSH risks;
- Includes a commitment to continually improve OSH and to affirm the importance of OSH and the well being of personnel in the workplace;
- Includes a commitment to comply with legal requirements and other requirements to which the facility subscribes;
- Is documented, implemented and maintained;
- Is communicated to all persons working for or on the behalf of the facility with the intention that they are made aware of their individual responsibility in the prevention of incidents;
- Is available to interested parties; and
- Is reviewed periodically to verify its relevance to the facility?

16.26 Has the facility documented and does it maintain an updated compilation of process safety information for workplace/process hazard analysis, risk assessments, and the development of training programs and operating procedures, etc., available to the relevant facility personnel, including the following types of information: [[SS 506-3:2006, Section 4.3.1.1](#)] **<RECORD KEEPING>**

- On the hazards of chemicals used or produced by the process (e.g., information included in MSDS);
- On the technology of the process (e.g., flow diagram, chemical process and inventory, operational limits and consequences of deviations); and
- On the equipment used in the process (e.g., regarding safety, materials, piping diagrams, hazardous areas, relief and ventilation systems, and design codes and standards)?

16.27 Has the facility established and implemented, and does it maintain, updated and available procedures for the following: [[SS 506-3:2006, Section 4.3.1.2](#)] **<RECORD KEEPING>**

- Ongoing identification of physical, chemical and biological hazards;
- Assessment of risks; and

- Implementation of necessary control measures?

Notes: The facility must maintain a system of periodic review to ensure that recommendations are implemented. Follow-ups on recommendations must be properly documented and communicated to the relevant parties. [[SS 506-3:2006, Section 4.3.1.2](#)]

<RECORD KEEPING>

See Section 4.3.1 of [SS 506-3:2006](#) for additional details on hazard identification, risk assessment and control.

16.28 Does the facility's OSH management system achieve the following: [[SS 506-3:2006, Section 4.3.2- 4.3.4](#)]

- Identify, access, evaluate and communicate to relevant personnel applicable legal and other OSH requirements; and
- Establish and maintain documented OSH objectives and targets by the implementation of an OSH management program?

Notes: See Section 4.4 of [SS 506-3:2006](#) for additional details on the implementation and operation of the OSH management program.

16.29 Does the facility ensure that any person performing a task on its behalf has demonstrated basic competencies in OSH and has sufficient knowledge (both generic and process-specific) to: [[SS 506-3:2006, Section 4.4.2](#)]

- Recognize potential hazards;
- Know their legal responsibilities; and
- Know their role to ensure a safe work environment?

Notes: Training may be conducted through formal courses or on-the-job training, including tool box meetings, talks, the issuance of handbooks, and conducting first-aid and emergency response drills, etc. [[SS 506-3:2006, Section 4.4.2](#)]

See Section 4.4.2 of [SS 506-3:2006](#) for additional details on the content of the required training program.

- 16.30** Has the facility established and implemented procedures for the proper use, storage, handling, movement and disposal of hazardous substances, including the following: [\[SS 506-3:2006, Section 4.4.6.7\(a\)\]](#)
- The use of process safety information in Question [16.26](#) to maintain a register of the facility's hazardous substances; and **<RECORD KEEPING>**
 - The accompaniment of each hazardous substance with a Safety Data Sheet (SDS) to facilitate risk assessment and training on the proper handling and safety precautions to be used during handling, storage and disposal?
- 16.31** Has the facility established and implemented procedures for the proper receipt, storage, issue, distribution, handling, safe use movement and disposal of hazardous substances, including the following: [\[SS 506-3:2006, Section 4.4.6.7\(b\)\]](#)
- Their storage in suitable and secure designated areas;
 - The storage of incompatible substances in different areas or areas that are separated by a physical barrier;
 - The provision of hazard labels on the external shells of storage tanks, vessels and containers;
 - The posting of warning signage at entrances to storage and other appropriate areas;
 - The provision of hazard communication training to all employees and contractors who may be exposed to the hazardous substances, including training on the hazards involved, safe handling procedures, PPE, and emergency response; and
 - The disposal of hazardous substances in accordance with regulatory requirements and manufacturer's recommendations?
- 16.32** Has the facility established and implemented procedures for obtaining approval prior to the procurement, acquisition or purchase of hazardous substances to ensure that their chemical, physical and toxicological properties have been reviewed by management? [\[SS 506-3:2006, Section 4.4.6.7\(c\)\]](#)

- 16.33** Has the facility established and implemented procedures for the inventory management of hazardous substances to ensure that stored quantities are not in excess of the capacities required for production or by regulatory requirements? [[SS 506-3:2006, Section 4.4.6.7\(d\)](#)]
- 16.34** Has the facility developed an emergency response plan and procedures for each level of the organization that identifies potential incidents, accidents and emergency situations and their impacts, and will prevent or mitigate any resulting illness or injury? [[SS 506-3:2006, Section 4.4.8](#)]
- 16.35** Does the facility's emergency response plan include the following elements: [[SS 506-3:2006, Section 4.4.8](#)]
- Establishment of a designated emergency control center with the following facilities:
 - Workplace and process layout maps or drawings;
 - Fire-fighting system and utilities drawings; and
 - Emergency communications, lighting and emergency response equipment;
 - Emergency team and their duties and responsibilities;
 - Appointment of a person in charge to implement the emergency response plan;
 - Notifications and initiating alarms;
 - Initial response (fire-fighting, first-aid, containment);
 - Evacuation and rescue, first aid and medical facilities; and
 - Nearest government response agency, including their roles and response time to emergencies?
- 16.36** Is the emergency plan periodically reviewed and revised, where necessary, especially after an incident or emergency? [[SS 506-3:2006, Section 4.4.8](#)]
- 16.37** Does the facility have a program for periodically conducting drills and exercises to test procedures, where practicable? [[SS 506-3:2006, Section 4.4.8](#)]

- 16.38** Is occupational safety and health monitored and measured on a regular basis? [[SS 506-3:2006, Section 4.4.8](#)]

Notes: The facility should employ both qualitative and quantitative measures, analyze the extent to which objectives have been met, implement proactive and reactive measures of performance, and record the data and results of monitoring and measurements. [[SS 506-3:2006, Section 4.4.8](#)] See [SS 506-3:2006](#), Section 4.4.8, for details. **<RECORD KEEPING>**

- 16.39** Does the facility conduct monitoring of the work environment and employees who are exposed to chemical agents or physical factors, to ensure exposure is within permissible levels? [[SS 506-3:2006, Section 4.4.8](#)]

Notes: See Section 15.0 of this protocol for permissible exposure levels and general workplace monitoring and medical surveillance requirements.

- 16.40** Does the facility have procedures for the calibration and maintenance of all monitoring equipment, and are records kept of calibration and maintenance activities and results? [[SS 506-3:2006, Section 4.4.8](#)] **<RECORD KEEPING>**

Notes: The performance of contractors must be evaluated in relation to the facility's internal standards and the standards specified in the contract. The facility should maintain and record performance statistics for contractors working at the facility. Disciplinary or corrective measures must be applied if safety and health performance is not acceptable or is in violation of internal standards or legal requirements. [[SS 506-3:2006, Section 4.4.8](#)]

- 16.41** Does the facility have a program to periodically evaluate compliance with the applicable legal requirements, and are records kept of the results of such periodic evaluations? [[SS 506-3:2006, Section 4.5.2.1](#)] **<RECORD KEEPING>**

Notes: The facility must also evaluate compliance with other requirements it has adopted; this evaluation may be separate from, or combined with, the evaluation of legal compliance. [[SS 506-3:2006, Section 4.5.2.2](#)]

- 16.42** Are comprehensive occupational safety and health inspections conducted at planned intervals according to the facility's inspection program, using a protocol or checklist, to verify compliance with legal requirements, company procedures and safe work practices? [[SS 506-3:2006, Section 4.5.2.3](#)]

- 16.43** Has the facility developed performance standards for occupational safety and health inspections that specify the following: [[SS 506-3:2006, Section 4.5.2.3](#)]

- Appropriate training for inspectors;
- Frequency of inspection; and
- Scope and coverage of the inspections?

16.44 Is the occupational safety and health inspection system evaluated to ensure standards are met? [[SS 506-3:2006, Section 4.5.2.3](#)]

16.45 Does the facility have procedures to ensure that incidents and nonconformances that might result in injury, illness or the release of hazardous substances are investigated? [[SS 506-3:2006, Section 4.5.3](#)]

16.46 Does the facility's incident and corrective action program include the following: [[SS 506-3:2006, Section 4.5.3](#)]

- Reporting, recording and investigation of incidents, accidents and nonconformities resulting in unsafe conditions or hazards;
- Actions to mitigate consequences of incidents, accidents or nonconformities;
- Determination of root causes;
- Evaluation of the need to revise risk assessments;
- Evaluation of the need for preventive actions;
- Initiation and completion of corrective and preventive actions; and
- Confirmation of the effectiveness of actions taken?

Notes: Any corrective or preventive actions must be evaluated through a risk assessment prior to implementation.

16.47 Are changes to documented procedures in the OSH management system resulting from corrective or preventive actions recorded, and are lessons learned communicated to all relevant facility personnel? [[SS 506-3:2006, Section 4.5.3](#)] **<RECORD KEEPING>**

Notes: The facility should conduct a periodic analysis of incidents and statistics to identify types, frequency, root causes, etc., for consideration in establishing safety and health strategic plans, promotional programs and training courses. [[SS 506-3:2006, Section 4.5.3](#)]

- 16.48** Does the facility maintain the appropriate records necessary to demonstrate conformance with the requirements of the facility's OSH management system and of [SS 506-3:2006](#), and are such records legible, identifiable and traceable? [[SS 506-3:2006, Section 4.5.4](#)] **<RECORD KEEPING>**

Notes: Procedures must be implemented for identification, storage, protection, retrieval, retention and disposal of records. [[SS 506-3:2006, Section 4.5.4](#)] **<RECORD KEEPING>**

- 16.49** Are internal audits of the OSH management system conducted at planned intervals to evaluate the following: [[SS 506-3:2006, Section 4.5.5](#)]

- Conformity of the safety and health management with the requirements of [SS 506-3:2006](#);
- Implementation and ongoing maintenance of the OSH management system;
- Effectiveness of the OSH management system at meeting the facility's policy, objectives and targets; and
- Compliance with applicable legal and other requirements?

Notes: The facility's audit procedures must cover responsibilities, competence and requirements for planning and conducting audits; reporting, and record keeping; as well as the evaluation of audit criteria, scope, frequency and methods. Auditors must be objective and the facility must maintain the impartiality of the audit process. [[SS 506-3:2006, Section 4.5.5](#)]

- 16.50** Does the facility ensure that the results of previous audits of the OSH management system are reviewed periodically and that facility audit results are provided to management? [[SS 506-3:2006, Section 4.5.5](#)]

- 16.51** Does the facility's top management review the OSH management system at planned intervals, including assessing opportunities for improvement and evaluating required changes to the management system? [[SS 506-3:2006, Section 4.6](#)]

- 16.52** Are records kept of the management review process of the facility's OSH management system? [[SS 506-3:2006, Section 4.6](#)] **<RECORD KEEPING>**

V. Hazardous Substance Control - Metalworking Industry

Notes: While the [Guidelines on the Implementation of Safety Management System for the Metalworking Industry](#) specify that they apply to metalworking factories, no specific definition or applicability is provided. See Section 10.0 of this protocol for the definition of a factory.

16.53 Has the facility established a written hazard communication program or procedure that includes the following: [\[Guidelines on the Implementation of Safety Management System for the Metalworking Industry, Section 12.2.1 \(a-d\)\]](#) **<RECORD KEEPING>**

- Maintenance of a register of hazardous substances in use in the facility with information on their location;
- Availability of Material Safety Data Sheets (MSDS) for each hazardous substance;
- A documented system for obtaining new and revised MSDS;
- Procedures for proper receipt, storage, issue, distribution, transportation, handling and safe use of the hazardous substances, including:
 - The identification of incompatible materials and potentially hazardous combinations and conditions that require special safety measures; and
 - The identification of high-risk processes and special procedures; and
- The appointment of technically competent persons to administer the control, procurement and storage of the hazardous substances?

16.54 Are all containers used to store hazardous substances labeled, tagged or marked with the following information: [\[Guidelines on the Implementation of Safety Management System for the Metalworking Industry, Section 12.2.1\(e\)\]](#)

- Identification of the hazardous chemical(s);
- Name used on material safety data sheet and in chemical list; and
- Hazard warning and control?

- 16.55** Does the facility provide designated storage areas for hazardous substances that meet the following conditions: [\[Guidelines on the Implementation of Safety Management System for the Metalworking Industry, Section 12.2.2\]](#)
- For small quantities stored in chemical storage cabinets, the cabinets are segregated by distance and/or physical barriers from other incompatible substances;
 - For drummed or bulk chemicals (including fuels and oils) the storage area is provided with secondary containment; and
 - All storage areas are inspected on a routine basis to ensure integrity of the chemical containers and secondary containment systems?
- 16.56** Is hazard communication training organized for all employees who may be exposed to hazardous substances? [\[Guidelines on the Implementation of Safety Management System for the Metalworking Industry, Section 12.2.3\]](#)
- 16.57** Is special training conducted for persons performing non-routine tasks involving hazardous chemicals that includes the following: [\[Guidelines on the Implementation of Safety Management System for the Metalworking Industry, Section 12.2.3\]](#)
- Review of the hazards of the chemicals;
 - Special work procedures;
 - Handling rules and precautions;
 - PPE; and
 - Spill prevention and containment procedures?
- 16.58** Are records maintained of training involving the use and handling of hazardous substances? [\[Guidelines on the Implementation of Safety Management System for the Metalworking Industry, Section 12.2.3\]](#) <RECORD KEEPING>

VI. Hazardous Substances - Emergency Response and Contingency Planning

- 16.59** If the facility is authorized to store hazardous substances on site through a license or permit, has it established and kept up to date an adequate emergency action plan that outlines actions to be taken in the event of an accidental spillage, leakage, release, accident or

emergency which may arise from the transport or storage of hazardous substances? [*Environmental Protection and Management (Hazardous Substances) Regulations, Regulations 17(2) and 22(1)*] <RECORD KEEPING>

16.60 Does the facility ensure that the emergency action plan as described in Question [16.59](#) contains the following elements: [*Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 22(3)*]

- Identification of likely accident scenarios and establishment of the likely impact zones;
- Notification and activation procedures;
- Response actions to contain and control the release and to mitigate the impact of the release;
- Monitoring of the affected areas, including the off-site affected areas;
- Procedures for decontamination and clean-up of affected areas;
- Names of personnel with their assigned roles and responsibilities in dealing with the emergency; and
- A list of emergency response equipment, including protective gear, fire-fighting equipment, oversized drums, emergency containers/tankers, absorbents, neutralizing agents, monitoring equipment, clean-up equipment, etc., made available for dealing with the emergency?

Notes: Guidance on issuing an emergency response plan (ERP), prepared by the Ministry of the Environment, is available at http://app2.nea.gov.sg/mgmt_hazsub.aspx (last accessed in September 2010). This gives technical guidance on preparation of impact zones, formats for emergency plans and standard operating procedures for response, and the facility obligations during an emergency.

16.61 Has the emergency action plan been approved by the Director? [*Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 22(2)*]

16.62 Does the facility ensure that there are trained personnel and equipment in readiness at all times to deal adequately with any spillage, leakage, release, accident or emergency which may arise in accordance with the established emergency action plan? [*Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 22(5)*]

16.63 If the facility experienced an accidental release of a hazardous substance, did it ensure that the following requirements were met: [Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 23 (1 through 3)]

- Immediate actions and mitigating measures were taken in accordance with the established emergency action plan to control and contain the release;
- The facility manager or person authorized to store the hazardous substance was immediately notified;
- The Director and the Singapore Civil Defence Force were immediately notified;
- The affected area was decontaminated, cleaned-up and restored back to normal; and

Notes: "Normal" is not defined.

- As soon as practicable, the Director was furnished with a detailed report in writing that included the following:
 - The circumstances of the accidental release of the hazardous substance(s);
 - The immediate actions and mitigating measures taken by the facility to control and contain the release and the measures taken to restore the affected areas to normal; and
 - The measures taken to prevent recurrence of a similar spill, leak, release, accident or emergency?

16.64 If the facility discovered a loss or theft of any hazardous substance, did it make the following notifications: [Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 24]

- Immediately notified the police and the Director; and
- As soon as practicable, provided a detailed report in writing to the Director on the circumstances leading to the loss or theft and the measures taken to prevent recurrence of the loss or theft?

16.65 If an actual or probable discharge of oil, an oily mixture, noxious liquid substance, or a mixture containing such substances occurred at the facility and discharged into Singapore waters from any place on land, did the facility perform each of the following: [\[Prevention of Pollution of the Sea Act, Sections 3 and 4\]](#) and [\[Prevention of Pollution of the Sea \(Reporting of Pollution Incidents\) Regulations, Regulations 7 through 10\]](#)

- Stopped the discharge as soon as practical after discovering it;
- Reported the incident to the Port Master as soon as possible;
- Ensured that the report to the Port Master included information regarding the time, type, and location of the incident, the quantity and type of substance involved, the assistance requested or sought, and/or the measures taken to mitigate the situation; and
- Provided a supplementary report updating the information contained in the initial report, providing information concerning further developments and complying with any request for additional information made by the Port Master?

Notes: Reports must be made by the fastest telecommunication channels available with the highest possible priority to the Port Master. [\[Prevention of Pollution of the Sea \(Reporting of Pollution Incidents\) Regulations, Regulation 11\]](#)

Regulations 7 through 11 of the [Prevention of Pollution of the Sea \(Reporting of Pollution Incidents\) Regulations](#) apply to any place having permanent means of loading or discharging oil, oily mixtures, noxious liquid substances or a mixture containing such substances, and any apparatus used for transferring oil, oily mixtures, noxious liquid substances or a mixture containing such substances. [\[Prevention of Pollution of the Sea \(Reporting of Pollution Incidents\) Regulations, Regulation 7\]](#)

VII. Toxic Substances

Notes: The term “toxic” is not defined in [CP 27:1999](#) – *Code of Practice for Factory Layout - Safety, Health and Welfare Considerations*.

However, see information in this protocol section on [SS 586:2008](#), implementing the Globally Harmonized System of Classification and Labelling of Chemicals, which specifies criteria for determining the hazard category of substances.

- 16.66** Wherever possible, has the facility substituted harmless or less harmful substances, processes, or techniques for harmful substances, processes or techniques? [[CP 27:1999, Section 2.5.1](#)]
- 16.67** Are all toxic substances such as cyanides, arsenic and cadmium, concentrated acids and alkalis, kept in a separate well-ventilated room under lock and key? [[CP 27:1999, Section 2.5.3](#)]
- 16.68** Are cyanides kept separately from all acids? [[CP 27:1999, Section 2.5.3](#)]
- 16.69** Are warning notices posted where toxic substances are used or stored that conform to the following requirements: [[CP 27:1999, Section 2.5.4](#)]
- In languages understood by persons employed in the factory;
 - Specifying the hazard of toxic substances; and
 - Placed at appropriate locations and at all entrances to workrooms where toxic substances are stored or used?

VIII. Hazardous Substances - Piping and Equipment

Notes: "Hazardous substances" are those listed in Table 15-1 in Section 15.0 of this protocol.

- 16.70** Does every pipe, pump, compressor and other equipment in the factory that is used to convey steam, air, refrigerant or any hazardous substance, and each part and fitting of those, meet the following requirements: [[Workplace Safety and Health \(General Provisions\) Regulations 2006, Regulation 34](#)]
- Is of good construction, sound material and adequate strength;
 - Is free from patent defects; and
 - Is properly maintained?

IX. Flammable and Combustible Liquids - General Storage

Notes: The following definitions apply to the subsections on flammable liquids: [[SS 532:2007, Section 3](#)]

- "Approved" means with the approval of, acceptable to, and meeting the prescribed standards of the authority having jurisdiction;

- “Boundary” means the perimeter of the whole of the site under the same occupancy as the storage facility;
- “Fire compartment” means a compartment with a wall, floor and ceiling made of durable construction, which are provided for the purpose of minimizing the risk of the spread of fire;
- “Fire wall” means a wall or other barrier constructed and placed with the objective of preventing the spread of fire from one place to another;
- “Flammable liquid” means any liquid, or mixture of liquids, or liquids containing solids in solution or suspension, (e.g. paints, varnishes, lacquers, but not including substances otherwise classified on account of their other more dangerous characteristics), with a flash point not greater than 150 degrees Centigrade;
- “Ignition source” means a source of energy sufficient to ignite a flammable atmosphere and includes, but is not limited to, naked flames, exposed incandescent material, electrical welding arcs, and electrical or mechanical equipment not approved for use in hazardous locations;
- “On-site facility” means any facility that processes, stores or handles flammable liquids inside the boundary of the installation, except for those that are minor storage;
- “Package” means an individual container for liquid, of capacity less than 250 liters;
- “Package store” means a safety cabinet, indoor compartment, room, outdoor area, platform, or building that is used for the purpose of storing or handling flammable liquids in packages;
- “Protected places” means:
 - Any residential building, place of worship, public building, school or college, hospital, theater, factory, workshop, office, store, warehouse, laboratory, shop, or any building in which persons are accustomed to assemble whether it is within or outside the boundary of the installation; and
 - Any ship lying at permanent berthing facilities; and
- “Vapor barrier” means a wall or other barrier constructed and placed with the object of preventing the passage of vapor for one place to another.

Figure 1 of [SS 532:2007](#) provides an illustration of boundaries, on-site facilities and protected places. [\[SS 532:2007, Figure 1\]](#)

Flammable liquids are classified into one of the following categories in accordance with the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS): [\[SS 532:2007, Section 3.12.1\]](#)

- “Category 1” means a liquid having a flash point < 23 degrees Centigrade and initial boiling point ≤ 35 degrees Centigrade;
- “Category 2” means a liquid having a flash point < 23 degrees Centigrade and initial boiling point > 35 degrees Centigrade;
- “Category 3” means a liquid having a flash point ≥ 23 degrees Centigrade and ≤ 60 degrees Centigrade; and
- “Category 4” means a liquid having a flash point > 60 degrees Centigrade and ≤ 93 degrees Centigrade.

Liquids with a flash point > 93 degrees Centigrade and ≤ 150 degrees Centigrade must comply with the requirements of Category 4 unless waived by the relevant local authority. [\[SS 532:2007, Section 3.12.1\]](#)

The storage of flammable liquids in a minor storage area is generally exempted from other requirements for storage of flammable materials. However, other workplace safety regulations may apply to quantities of flammable materials considered as minor storage. Storage of flammable materials not exceeding the quantities listed below is considered minor storage: [\[SS 532:2007, Section 4.1\]](#)

- In offices, godowns, warehouses, stores, or laboratories:
 - Category 1 and 2 flammable liquids: maximum storage of 5 liters or 0.2 liters per square meter of designated minor storage area, but not exceeding 20 liters per minor storage area;
 - Category 3 flammable liquids: maximum storage of 10 liters or 0.5 liters per square meter of designated minor storage area, but not exceeding 50 liters per minor storage area;
 - Category 4 flammable liquids: maximum storage of 20 liters or 1.0 liters per square meter of designated minor storage area, but not exceeding 100 liters per minor storage area; and

- Mixed storage of flammable liquids: maximum storage of 20 liters or 1.0 liters per square meter of designated minor storage area, but not exceeding 100 liters per minor storage area, however, the individual category storage limits must not be exceeded; and
- In factories:
 - Category 1 and 2 flammable liquids: maximum storage of 10 liters or 0.5 liters per square meter of designated minor storage area, but not exceeding 50 liters per minor storage area;
 - Category 3 flammable liquids: maximum storage of 20 liters or 1.0 liters per square meter of designated minor storage area, but not exceeding 1000 liters per minor storage area;
 - Category 4 flammable liquids: maximum storage of 50 liters or 2.0 liters per square meter of designated minor storage area, but not exceeding 200 liters per minor storage area; and
 - Mixed storage of flammable liquids: maximum storage of 50 liters or 2.0 liters per square meter of designated minor storage area, but not exceeding 200 liters per minor storage area, however, the individual category storage limits must not be exceeded.

16.71 If the facility has minor storage of flammable liquids, does it observe the following precautions for those minor storage areas: [\[SS 532:2007, Section 4.2\]](#)

- The storage is not in proximity to a heat or ignition source;
- Any materials that might interact dangerously if mixed are kept apart;
- Flammable liquids are not used or stored where they might prevent workers from escaping from the building;
- Concentrated storage of flammable liquids in any one area is avoided;
- Transportation of the flammable liquid from storage to the point of use is done in a manner that minimizes the possibility of spills or fire;

- Spills are cleaned up immediately and the clean-up materials are disposed of safely in accordance with any relevant local regulations and not into the public sewer system; and
- Persons who handle flammable liquids are aware of the hazards involved?

16.72 If the facility stores flammable liquids in a minor storage area, are the containers managed as follows: [\[SS 532:2007, Section 4.1 and Table 2\]](#)

- Containers have airtight lids and are compatible with the material being stored;
- The maximum capacity of any one container does not exceed the following:
 - Category 1 and 2 flammable liquids - 5 liters;
 - Category 3 flammable liquids - 10 liters; and
 - Category 4 flammable liquids - 25 L;
- Containers are kept closed when not in use;
- Packages are opened or liquids are decanted in a well-ventilated area away from any potential ignition source; and
- Containers are not pressurized unless they are designed for that purpose?

16.73 If the facility has minor storage for flammable liquids, are the following minimum separation distances observed: [\[SS 532:2007, Section 4.3\]](#)

- Between two indoor minor storage areas:
 - 10 meters for a non-sprinkler protected area; and
 - 7.5 meters for a sprinkler protected area;
- Between an indoor minor storage area and a safety cabinet:
 - 5 meters for a non-sprinkler protected area; and
 - 3 meters for a sprinkler protected area;

- Between an outdoor minor storage area and the facility boundary, an on-site facility, or a protected place, 1.5 meters;
- Between two outdoor minor storage areas, 7.5 meters; and
- Between an indoor and outdoor minor storage area, 5 meters?

Notes: The separation distance is measured from the outermost package / container in the minor storage. [\[SS 532:2007, Section 4.3\]](#)

If an indoor and outdoor minor storage area are separated by a 2-hour fire rated wall capable of preventing the spread of fire, the separation distance may be measured in a horizontal plan around the end of the wall. [\[SS 532:2007, Section 4.3\(d\)\]](#)

16.74 Are all the facilities on site that handle flammable liquids designed and constructed to be safe and suitable for the conditions of use, including attention to the following: [\[SS 532:2007, Section 5.2.1\]](#)

- Avoidance of ignition sources;
- Separation of potential hazards; and
- Avoidance of flammable concentrations by the enclosure of the vapor source, or by ventilation to dilute concentrations to a safe level?

Notes: Particular attention should be paid to the following: [\[SS 532:2007, Section 5.2.1\]](#)

- Working pressures and structural stresses;
- Heat, corrosion, or attack by the liquid being handled;
- The design of plant, equipment, and operating methods to minimize fire and accident risks and the possibility of errors and misunderstanding by staff;
- Fire-fighting facilities;
- Clear identification of the function of any valve, switch or control actuator, particularly if remote;
- Safe entry to and exit from all working locations;

- Ventilation for vapor dispersal, taking into account the possible effect of nearby structures, excavations, embankments, and the like;
- Identification of and attention to points of vapor relief; and
- Avoidance of contamination of soil and water and public sewer system.

The facility must also be designed to facilitate the response to an emergency, taking into account the following: [\[SS 532:2007, Section 5.2.2\]](#)

- The nature and quantity of the liquids stores;
- The layout of the storage area;
- Access through or around walls or other barriers;
- The type of construction of any buildings; and
- The type of fire protection system.

16.75 In areas where a flammable liquid is being transferred or used in a manner that releases vapors, does the facility ensure that the ventilation, extraction, or dispersal provisions are sufficient to maintain exposure levels below the applicable exposure standards set out in the national workplace regulations? [\[SS 532:2007, Section 5.2.3\]](#)

Notes: See Appendix 15-B of Section 15.0 of this protocol for permissible exposure levels of toxic substances.

16.76 Does the facility ensure that any alterations, extension or repairs (including removals) to any installation do not contravene the requirements of [SS 532:2007](#), and do not render the installation hazardous or otherwise unacceptable to the authority? [\[SS 532:2007, Section 5.2.5\]](#)

Notes: Any repairs must be carried out to a standard not less than then standard of the original installation. [\[SS 532:2007, Section 5.2.5\]](#)

16.77 Has all electrical wiring and equipment located in each hazardous or potentially hazardous zone, as defined in *NFPA 70 - National Electrical Code* or *SS 254 - Electrical Apparatus for Explosive Gas Atmospheres*, been listed and marked for installation in the appropriate hazardous zone? [\[SS 532:2007, Section 5.2.6\]](#)

- 16.78** Does the facility ensure that artificial lighting is provided at a level appropriate to the activity, if natural lighting is inadequate? [[SS 532:2007, Section 5.2.7](#)]

Notes: A minimum value of 50 lux is recommended in [SS 532:2007](#) for walkways, and areas where there are fittings, gauges, couplings, or emergency equipment. [[SS 532:2007, Section 5.2.7](#)]

- 16.79** Is every package store larger than a minor storage restricted to the storage of flammable liquids unless the following conditions are met: [[SS 532:2007, Sections 5.2.8 and 6.2.1](#)]

- Specific approval is given for the storage of other products;
- Such other products will not react dangerously or be incompatible with the flammable liquids; and
- The filling, decanting, cleaning and painting of packages is subject to any additional specific requirements?

- 16.80** Does the facility ensure that all flammable liquids storage areas are appropriately secured against unauthorized access? [[SS 532:2007, Section 5.4.1](#)]

- 16.81** Does the facility ensure that appropriate precautionary statements are displayed at the entrances to any storage area? [[SS 532:2007, Section 5.4.1](#)]

Notes: A hazard precautionary statement is a phrase which describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposures to a hazardous chemical, improper storage, or handling of hazardous chemicals. Four types of precautionary statements include prevention, response, storage and disposal. Table 1 of [SS 532:2007](#) provides general guides for the precautionary statements. [[SS 532:2007, Section 3.18.4](#)]

- 16.82** Does the facility ensure that hazard labels are used for flammable storage containers and areas? [[SS 532:2007, Section 5.4.2](#)]

Notes: Hazard labels can be in the form of written, printed, or graphic information affixed to or printed on a package or signage at the entrances to storage areas. Hazard labels consist of a hazard symbol, a hazard signal word and a hazard statement. [[SS 532:2007, Section 5.4.2](#)]

According to [SS 532:2007](#), the GHS “flame” symbol is recommended as part of the hazard label. The flame symbol is black on a white background with a red diamond frame. This

hazard symbol is used for all categories of flammable liquids, except Category 4 which does not require the symbol. [SS 532:2007, Section 3.18.1] The GHS pictogram of the “flame” symbol can be viewed at (last accessed in August 2010):

<http://www.unece.org/trans/danger/publi/ghs/pictograms.html>.

The hazard signal word is used to indicate the relative level of severity of hazard and alert the user to a potential hazard. For Category 1 and 2 flammable liquids, the hazard signal word is “Danger,” and for Category 3 and 4 flammable liquids, the hazard signal word is “Warning.” [SS 532:2007, Section 3.18.2]

A hazard statement is a phrase assigned to a hazard category that describes the name of the hazard and, where appropriate, the degree of hazard. The hazard statements for flammable liquids are as follows: [SS 532:2007, Section 3.18.3]

- For Category 1, “Extremely flammable liquid and vapor”;
- For Category 2, “Highly flammable liquid and vapor”;
- For Category 3, “Flammable liquid and vapor”; and
- For Category 4, “Combustible liquid.”

16.83 Does the location of any package storage area, except storage in safety cabinets, meet the following requirements: [SS 532:2007, Section 6.2.2]

- It is located on the ground floor or level, with direct access from the fire engine access road; and
- The selection of the location considers the following:
 - Separation from other activities, buildings, public places, or other property or persons;
 - Separation from possible ignition sources;
 - Ventilation to ensure dispersal of vapors;
 - Precautions against toxic hazards; and
 - Control of spillage and drainage from the area?

16.84 Does every package store meet the following requirements: [\[SS 532:2007, Section 6.2.3\]](#)

- The floor within the compound is constructed to minimize the spread of the fire to other piles or racking;
- Provisions are made to contain any leakage or spillage from the packages, and to prevent it from contaminating surrounding soil or from entering the public sewer system or any drainage system other than one intended specifically for its drainage and collection; and
- Control is by a spill containment compound or the equivalent?

Notes: Drainage channels to a separate spill containment compound, a drainage tank or pit may be used. [\[SS 532: 2007, Section 6.2.3\]](#)

16.85 Is the spill containment compound large enough to hold not less than 100 percent of the largest package plus 25 percent of the storage capacity for storage up to 10,000 liters, plus an additional 10 percent of the storage capacity for storage of more than 10,000 liters? [\[SS 532:2007, Section 6.2.3\]](#)

Notes: If an automatic or manual fire suppression system using water is installed for the package storage, the capacity of the spill containment compound must be increased by a volume equal to the water output of the fire suppression system over 20 minutes. The drainage system must be capable of carrying the water output of the fire suppression system over the spill containment compound at the design density of discharge. [\[SS 532:2007, Section 6.2.3\]](#)

Where multiple package stores are connected to a common spill containment compound, the capacity of the compound must be equal to the largest package store's spill containment compound plus 25 percent of the total volume of the remaining package stores' spill containment compounds. [\[SS 532:2007, Section 6.2.3\]](#)

16.86 Are platforms, such as loading docks, constructed as follows: [\[SS 532:2007, Section 6.2.4\]](#)

- Either as a concrete deck on solid fill or on concrete supports; or
- As a timber deck on steel, concrete or masonry posts or framework?

Notes: Any storage platform with underdeck space (except for solid fill platforms) must be provided with underdeck ventilation. [\[SS 532:2007, Section 6.2.4\]](#)

- 16.87** Is adequate natural or mechanical ventilation provided for each package store to prevent the accumulation of vapor within the compound area of the indoor storage? [[SS 532:2007, Section 6.2.5](#)]

Notes: It is sufficient to maintain the ambient concentration of flammable vapors to below the lower explosive limit (LEL). [[SS 532:2007, Section 6.2.5](#)]

- 16.88** Do all vent openings inside a package store conform to the following: [[SS 532:2007, Section 6.2.6](#)]

- Are provided with a barrier, if necessary, to prevent blockage by stored packages; and
- Where the vent passes through wall that incorporates a cavity or is made of bricks or blocks that incorporate cavities, a metal sleeve to prevent leakage of vapor into the cavities is provided?

- 16.89** Does the facility employ security measures and means for controlling entry to a storage area? [[SS 532:2007, Section 6.2.8](#)]

- 16.90** Does the distance between the most remote points of any package in the storage area to the nearest fire engine access road meet the following requirements: [[SS 532:2007, Section 6.2.9](#)]

- For external storage area, it does not exceed 60 meters; and
- For indoor storage, it does not exceed 45 meters?

- 16.91** Are warning notices (also called hazard precautionary statements) displayed so that they are clearly readable from any access point? [[SS 532:2007, Section 3.18.4 and 6.2.10](#)]

Notes: A hazard precautionary statement is a phrase, which describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposures to a hazardous chemical, or improper storage or handling of a hazardous chemical. Four types of precautionary statements include prevention, response, storage and disposal. Table 1 of [SS 532:2007](#) provides general guides for the precautionary statements. [[SS 532:2007, Section 3.18.4](#)]

- 16.92** Does the facility ensure that the following requirements are met for a restricted area for flammable liquids: [[SS 532:2007, Section 9.2.1 - 9.2.5](#)]

- No ignition sources, matches or lighters are introduced into the area;
- Smoking is prohibited, except in specifically approved places, and “No Smoking” signs and “Smoking Permitted” signs are displayed in the appropriate areas;
- Procedures are established to control entry to the area and prevent unauthorized access;
- Vehicle access and movement within a restricted area is controlled; and
- Adequate illumination is provided in the restricted area, and any electric hand lamps are of a type approved for the purpose?

Notes: The term “adequate” is not defined.

16.93 If the facility engages a contractor to perform work within a restricted area for flammable liquids, are the following requirements met: [\[SS 532:2007, Section 9.2.6\]](#)

- The contract includes requirements for adherence to applicable safety regulations;
- The contractor is instructed that work is to be carried out only in the designated area; and
- Work methods and procedures, as regards matters of safety, are agreed upon by the facility and the contractor?

Notes: It is the responsibility of the contractor to ensure that the work is planned and supervised by responsible staff. [\[SS 532:2007, Section 9.2.6\(c\)\]](#)

16.94 In regards to prevention and control of leakage or spillage of flammable liquids, are the following requirements met: [\[SS 532:2007, Section 9.2.7\]](#)

- A contingency plan is established;
- Actions are taken immediately to clean up a spill or leak according to the contingency plan; and
- All spilled or leaked materials are collected for proper disposal?

16.95 If the facility manually transfers a Category 1 or 2 flammable liquid between containers and transports it from storage to the point of use, are the following requirements met: [\[SS 532:2007, Section 9.2.8\]](#)

- A self-closing safety faucet is used for dispensing;
- A safety container is used for the transport; and
- Proper safety precautions against static charge build-up are in place?

16.96 Are flammable liquid storage areas maintained in a safe condition as follows: [\[SS 532:2007, Section 9.2.10\]](#)

- The area is kept clear of all extraneous material;
- Required clearance distances are maintained at all times;
- Packages are not placed in locations that impede worker entry or exit;
- Vegetation that may become a fire hazard is kept short; and
- Weed killer that is known to be a potential source of fire or land contamination is not used?

16.97 Does the facility ensure that personnel are not exposed to harmful concentrations of vapors, oxygen-deficient atmospheres, or other environmental hazards unless suitable protective clothing, breathing apparatus, or other protection appropriate to the circumstances is used? [\[SS 532:2007, Section 9.3.3\]](#)

Notes: See Appendix 15-B of Section 15.0 of this protocol for permissible exposure levels of toxic substances.

[SS 532:2007](#) does not specify the types of protective clothing or apparatus to be used. See Section 15.0 of this protocol for requirements regarding personal protective equipment and respiratory equipment.

16.98 Does the facility ensure that all operational and maintenance work is planned and supervised by responsible staff who will ensure that all safety precautions are observed? [\[SS 532:2007, Section 9.3.5\]](#)

16.99 If the facility uses or stores flammable liquids, is the following training provided: [\[SS 532:2007, Section 9.3.1\]](#)

- Personnel, including contractors, are made fully aware of in-house safety rules applicable to their duties;
- Personnel are required to attend and pass a relevant safety orientation course(s) conducted by an approved training center; and
- Personnel, including contractors, are trained to be fully competent for the operation to which they are assigned?

X. Flammable Liquids - Indoor Storage

Notes: Requirements in this subsection are in addition to the requirements in Subsection entitled, “Flammable and Combustible Liquids - General Storage”; see notes at the beginning of that subsection for definitions that apply to this subsection.

16.100 Are indoor package stores, except storage in safety cabinets, located on the ground floor or level directly accessible from street level, site road way or fire engine access road? [\[SS 532:2007, Section 6.4.2\]](#)

Notes: An installation at the level of a loading dock is deemed to comply with this requirement. Care must be taken to ensure that nearby embankments, excavations or retaining walls do not interfere with the operation of a natural ventilation system. [\[SS 532:2007, Section 6.4.2\(a\)\]](#)

16.101 If the only means of access to an indoor package store is through an associated working area that is an on-site facility, are the following requirements observed: [\[SS 532:2007, Section 6.4.2\(b\)\]](#)

- The capacity of the indoor package store is limited to 3,000 liters if non-sprinkler protected, or 5,000 if sprinkler protected;
- The travel distance between the external opening and the fire door of the indoor package store is not more than 10 meters if non-sprinkler protected, or 15 meters if sprinkler protected;
- The indoor package store is a fire compartment; and

- The size of the indoor package store is based on the store's fire suppression system, as follows:
 - For a manual fire alarm system, the compartment has a maximum floor area not exceeding 50 square meters;
 - For an automatic fire alarm system, the compartment has a maximum floor area not exceeding 200 square meters;
 - For an automatic fire suppression system, the compartment has a maximum floor area not exceeding 600 square meters; and
 - For an automatic foam suppression system, the compartment has a maximum floor area not exceeding 900 square meters?

16.102 Is the stacking height of an indoor package store limited to 3.6 meters, unless the building is protected with a fire suppression system designed in accordance with *CP 52:2004*, in which case the maximum height is 15 meters? [[SS 532:2007, Section 6.4.2\(c\)](#)]

Notes: The stacking height of an indoor package store must be based on *NFPA 30*. [[SS 532:2007, Section 6.4.2\(c\)](#)]

16.103 Is each indoor storage compartment constructed as follows: [[SS 532:2007, Section 6.4.3](#)]

- The walls are made of masonry or concrete with a 4-hour fire rating;
- The floors are of earth, masonry or concrete;
- If there is a basement below the ground floor where the store is, the ceiling of the basement is constructed of reinforced concrete with a 4-hour fire rating;
- If the roof of the attached package store is lower than the adjacent building, then it is constructed to have a minimum 4-hour fire rating for the two thirds of the roof surface adjacent to the building, but not less than 5 meters measured horizontally from the adjoining wall of the adjacent building;
- An occupancy or usage located above the storage compartment is separated by a barrier having a minimum 4-hour fire rating;
- The external surface of any wall is masonry or concrete; and

- The barrier separating the storage from other occupancies is a 4-hour fire rated wall with an automatic closing 4-hour fire rated door with a fusible link or other actuating mechanism?

16.104 Is every doorway to a compartment an outward-swinging, automatic closing fire door with a minimum fire rating of 2-hours? [[SS 532:2007, Section 6.4.4](#)]

Notes: If the door is on the outside wall of a building, it may be made of any material faced with non-combustible cladding, subject to the approval of the local authority, provided: [[SS 532:2007, Section 6.4.4](#)]

- There is no building wall with less than a 4-hour fire rating within 5 meters of the opening; and
- There is no storage of combustible material within 5 meters of the opening.

16.105 Is each window in a storage compartment of the same fire rating as the wall it occupies? [[SS 532:2007, Section 6.4.5](#)]

16.106 Is each indoor storage compartment provided with a natural or mechanical ventilation system meeting the requirements of Section 6.4.6 of [SS 532:2007](#)? [[SS 532:2007, Section 6.4.6](#)]

Notes: Natural ventilation may be used where one wall of the storage compartment is an external building wall, and its length is not less than the depth of the storage compartment (the distance between the external wall and its opposite internal wall). The depth of the compartment must not be more than 5 meters. [[SS 532:2007, Section 6.4.6.1](#)]

Section 6.4.6 of [SS 532:2007](#) provides detailed requirements on the construction of ventilation systems, which is beyond the scope of this protocol.

16.107 Does the mechanical ventilation system for an indoor package store meet the following requirements: [[SS 532:2007, Section 6.4.6.3 \(d\) and \(g\) and 9.2.15](#)]

- It is provided with an airflow failure warning device;
- It is designed to operate either continuously, whenever work is being conducted in the package store, or whenever a person is in the package store;
- It is backed up with a secondary power supply; and

- Operating procedures are in place to ensure that the system operates as required?

16.108 If a safety cabinet is used for storage of flammable materials, are the following requirements met: [\[SS 532:2007, Section 6.5.1 - 6.5.4\]](#)

- The cabinet is constructed of non-combustible material, and it is approved and listed by a certified testing laboratory, such as Underwriters Laboratory (UL) or Factory Mutual (FM);
- Not more than 250 liters aggregate of flammable liquid is stored in any individual cabinet;
- Other classes of dangerous goods (as classified in the GHS) are not stored in the same cabinet as flammable liquids; and
- Each cabinet is marked with its maximum capacity, an appropriate flammable liquid label of at least 250 millimeters size, and a warning sign that says "NO SMOKING, NO IGNITION SOURCES" in lettering at least 50 millimeters high?

16.109 If a safety cabinet is used for storage of flammable liquids, is the quantity of flammable liquids moved to the cabinet per trip 250 liters or less? [\[SS 532:2007, Section 6.5.2\]](#)

16.110 Are the following requirements for storage of flammable liquids in safety cabinets met: [\[SS 532:2007, Section 6.5.5 - 6.5.7\]](#)

- The maximum capacity of liquid stored does not exceed 2 liters per square meter per storey of the facility;
- Safety cabinets are not located in a basement;
- For a non-sprinkler protected area, a group of cabinets with a maximum aggregate capacity of 500 liters is separated by a minimum distance of 10 meters from any other group;

Notes: A group of cabinets with a maximum aggregate capacity of 750 liters is acceptable if it is contained by a 2-hour fire rated compartment with an external wall with a window. [\[SS 532:2007, Section 6.5.5.1\]](#)

- For a sprinkler protected area, a group of cabinets with a maximum aggregate capacity of 750 liters is separated by a minimum distance of 10 meters from any other group;

Notes: A group of cabinets with a maximum aggregate capacity of 1500 liters is acceptable if it is contained by a 1-hour fire rated compartment with an external wall with a window. [[SS 532:2007, Section 6.5.5.2](#)]

- The safety cabinet is at least 3 meters from any naked flames; and
- The location of the safety cabinet does not hamper the escape of persons through exits and stairways?

XI. Flammable and Combustible Liquids - External and Outdoor Storage

Notes: Requirements in this subsection are in addition to the general storage requirements in the Subsection entitled, “Flammable and Combustible Liquids - General Storage.”

See the notes at the beginning of the Subsection entitled, “Flammable and Combustible Liquids - General Storage” for definitions that apply to this subsection.

Although the terms “external storage” and “outdoor storage” are not defined in [SS 532:2007](#), the requirements in this subsection apply to small outbuildings such as sheds or garages.

For the purposes of determining separation distances for outdoor package storage of flammable liquids, single piles of packages are classified into groups based on the category of flammable liquids in the pile and the maximum allowable quantity (MAQ), as follows: [[SS 532:2007, Section 6.3.1.1 and Table 4](#)]

- For Category 1 and 2 flammable liquids:
 - Group A: MAQ = 0.1 to 2 cubic meters;
 - Group B: MAQ = 4 to 8 cubic meters;
 - Group C: MAQ = 10 to 50 cubic meters; and
 - Group D: MAQ = 60 to 120 cubic meters;

- For Category 3 flammable liquids:
 - Group A: MAQ = 0.5 to 8 cubic meters;
 - Group B: MAQ = 15 to 30 cubic meters;
 - Group C: MAQ = 40 to 150 cubic meters; and
 - Group D: MAQ = 180 to 300 cubic meters; and
- For Category 4 flammable liquids:
 - Group A: MAQ = 2.5 to 29 cubic meters;
 - Group B: MAQ = 40 to 100 cubic meters;
 - Group C: MAQ = 140 to 520 cubic meters; and
 - Group D: MAQ = 640 to 1500 cubic meters.

The following requirements apply when determining separation distances: [\[SS 532:2007, Section 6.3.1.3\(g\)-\(h\), \(k\)-\(m\)\]](#)

- Separation distances are measured from the internal perimeter of the bund;
- Where the store has an in-built firewall or vapor barrier, the separation distance is measured from the nearest potential point of vapor exit;
- Where two or more separate package stores are located on the same boundary, they may be considered as follows:
 - Separately, as long as the separation distance between them is the separation distance given on Table 6 of [SS 532:2007](#) for the capacity of the larger of the two stores (see Table [16-1](#), Part 1), but not less than 5 meters; or
 - As one store, with an aggregate capacity of the stores;
- Where flammable liquids of different categories are kept in one storage area, the separation distance is determined using the category of flammable liquid present with the lowest flashpoint and the aggregate quantity of all liquids stored (excluding minor storage quantities); and

- Adjacent package stores separated by 4-hour rated firewalls and fitted with 4-hour rated fire doors with no access between stores may be treated as individual package stores without aggregation.

Separation distance may be reduced by the use of firewalls and vapor barriers. [\[SS 532:2007, Table 5\]](#) Detailed requirements for measuring separation distances when a vapor barrier(s) is present are given in Section 6.3.2 of [SS 532:2007](#).

- 16.111** If a safety cabinet is used for outdoor storage of flammable liquids, does it meet the requirements given in Question [16.108](#) through Question [16.110](#), and is it protected against weather, corrosion and traffic damage? [\[SS 532:2007, Section 6.3.3\(d\)\]](#)
- 16.112** Are all outdoor groups of flammable liquids separated from on-site facilities and protected places by the minimum distance as indicated in Table 5 of [SS 532:2007](#) (see Table [16-1](#), Part 2)? [\[SS 532:2007, Sections 6.3.1\(a\), 6.3.1.2 and Table 5\]](#)

Notes: The separation distance to any on-site facility does not have to exceed 15 meters for Category 1 and 2 liquids, 7.5 meters for Category 3 liquids, and 3 meters for Category 4 liquids. [\[SS 532:2007, Section 6.3.1.3\(c\)\]](#)

Any small office within the package store area that is used for the direct supervision of the storage is not considered an on-site facility. [\[SS 532:2007, Section 6.3.1.3\(d\)\]](#)

Each of the following is considered to be an on-site facility: [\[SS 532:2007, Section 6.3.1.3\(f\), \(i\)\]](#)

- A tank storage; and
- A separate spill containment compound (such as a drainage tank or sump) that receives drainage from a flammable liquids storage area.

In general, the stacking height per pile is limited to 3.6 meters for Category 1, 2, and 3 flammable liquids and 6.8 meters for Category 4 flammable liquids. [\[SS 532:2007, Table 5\]](#)

- 16.113** For outdoor package stores, is the minimum separation distance to any boundary or fixed ignition source as specified in Table 6 of [SS 532:2007](#) (see Table [16-1](#), Part 1)? [\[SS 532:2007, Section 6.3.1.3 and Table 6\]](#)
- 16.114** Does the facility ensure that the distance between two groups is at least half of the minimum separation distance specified in Table 5 of [SS 532:2007](#) (see Table [16-1](#), Part 2)? [\[SS 532:2007, Section 6.3.1.3\(b\)\]](#)

- 16.115** Where a fire door connects a storage area with an associated working area, is the separation distance from the fire door to an ignition source not less than those given in Table 6 of [SS 532:2007](#) (see Table [16-1](#), Part 1)? [[SS 532:2007, Section 6.3.1.3\(i\)](#)]
- 16.116** Are all outdoor storage areas graded in a manner to divert possible spills away from buildings or other exposures, or are they surrounded by a curb at least 15 centimeters high? [[SS 532:2007, Section 6.3.2.1](#)]
- 16.117** If curbs are used in outdoor storage areas to contain or divert spills, are there provisions for draining accumulations of groundwater, rain water or spills of liquids such that the drains terminate at a safe location and are accessible to operation under fire conditions? [[SS 532:2007, Section 6.3.2.1](#)]
- 16.118** Are all outdoor storage areas protected against tampering or trespass where necessary, and kept free of weeds, debris and other combustible materials not necessary to the storage? [[SS 532:2007, Section 6.3.2.2](#)]
- 16.119** Does the facility ensure that any outdoor package store is constructed as follows: [[SS 532:2007, Section 6.3.3](#)]

- Walls and roofs, if included, are masonry concrete or a structure sheeted with non-flammable material (except for any necessary skylights) unless a fire-rated structure is required;

Notes: Non-flammable material on timber frames complies with these requirements. [[SS 532:2007, Section 6.3.3\(a\)](#)]

- Floors forming part of the spillage catchment system are impervious, not liable to degradation or frictional sparking, and preferably made of concrete or masonry; and
- Platforms, if included, are impervious, not liable to degradation or frictional sparking, and preferably made of concrete or masonry, and the loading face includes a vapor barrier up to the deck height, extending the full length of the face and continuing at least 1 meter along the side at each end?

Notes: This requirement may be waived if the platform is not more than 20 m² in area and is used only for storage of Category 4 flammable liquid. [[SS 532:2007, Section 6.3.3\(c\)](#)]

- 16.120** If an outdoor storage has no wall, other than a bund, on one or more sides, are the packages arranged or stacked so that they are unlikely to fall outside the compound? [[SS 532:2007, Section 9.2.9](#)]

XII. Chemical/Oil Storage

- 16.121** Is any chemical or oil store provided with leak and spill containment that meet the following conditions: [[Code of Practice on Pollution Control, Section 4.1.2\(d\)](#)]
- The area does not have any outlet/opening leading to a storm water drain or sewer; and
 - All leaks and spillage are collected for proper disposal as toxic industrial wastes?
- 16.122** Is the floor of any chemical warehouse coated with a layer of chemical-resistant material? [[Code of Practice on Pollution Control, Section 4.1.2\(f\)\(iv\)](#)]

XIII. Petroleum and Flammable Materials - Storage

Notes: This subsection covers containers and storage in manufacturing and business applications. Special requirements for retail filling/service stations and dealers in liquefied petroleum gas are not covered here. Consult the [Fire Safety \(Petroleum and Flammable Materials\) Regulations](#) for those requirements.

In this subsection, the following definitions apply: [[Fire Safety Act, Section 34\(1\)](#)]

- “Class 0 petroleum” means liquefied petroleum gas;
- “Class I petroleum” means any petroleum having a flashpoint of less than 23 degrees Celsius, but does not include Class 0 petroleum;
- “Class II petroleum” means any petroleum having a flashpoint of or exceeding 23 degrees Celsius but less than 61 degrees Celsius;
- “Flammable material” means any substances specified in Appendix 13-B in Section 13.0 of this protocol; and
- “Petroleum” includes crude petroleum, liquefied petroleum gas and other naturally occurring hydrocarbon liquids derived from crude petroleum, coal, shale, peat or other bituminous substances.

For the purposes of the [Fire Safety \(Petroleum and Flammable Materials\) Regulations](#), “tank” refers to a container with a water capacity of 450 liters or more. “Container” means anything which may be used to store petroleum or flammable material. [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 2\(1\)\]](#) See Section 6.0 of this protocol for requirements specific to tanks.

- 16.123** If the facility stores petroleum or flammable material in quantities equal to or greater than those specified in Table [16-2](#), has it obtained a license from the Commissioner to do so? [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 4\]](#) and [\[Fire Safety \(Petroleum and Flammable Materials\) Exemption Order 2005\]](#)

Notes: Licenses are valid for up to three years. [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 7\(1\)\]](#)

The [Fire Safety \(Petroleum and Flammable Materials\) Exemption Order 2005](#) sets forth threshold quantities for storage licenses. Facilities storing quantities of petroleum and flammable materials less than those specified in Table [16-2](#) are not required to have a license. [\[Fire Safety \(Petroleum and Flammable Materials\) Exemption Order 2005\]](#)

- 16.124** If the facility has a license to store petroleum or flammable materials, is the license displayed at all times in a prominent and accessible place at the facility, and is it made available at all times to an inspector, if requested? [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulations 11\(1\) and 12\]](#)
- 16.125** If the facility has a license to store petroleum or flammable materials and subsequently ceases to store petroleum at the facility, does it inform the Commissioner in writing within 14 days, and does it ensure that all storage systems and installations used in filling, dispensing or storage of petroleum or flammable material are safely removed? [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 13\]](#)
- 16.126** If the facility dispenses any class of petroleum or flammable material, has it received specific approval from the Commissioner to do so? [\[Fire Safety Act, Section 36\(2\)\]](#)

Notes: Petroleum or flammable material may only be dispensed on licensed premises but specific additional approval from the Commissioner must be obtained for dispensing, in addition to licensing for the storage of petroleum. [\[Fire Safety Act, Section 36\]](#)

Dispensing includes transfer of any class of petroleum or flammable material from one container to any other container for the purpose of distribution, through hose, pipe or by any other means, and includes discharging into a motor vehicle or from the tank of a road tanker. [\[Fire Safety Act, Section 34\]](#)

- 16.127** If the facility stores or keeps flammable material, does it ensure that the storage or keeping is conducted in accordance with the following requirements: [\[Fire Safety Act, Section 35\]](#)
- In a premises licensed by the Commissioner for the storage or keeping of the flammable material;
 - In the quantity and manner prescribed; and
 - In accordance with the provisions and conditions of the license?
- 16.128** Does the facility maintain, for at least two years from the date of the last entry, a register of all petroleum and flammable materials stored at the premises, and does the register include the following information: [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 18\]](#) **<RECORD KEEPING>**
- Total quantity of each material stored;
 - Actual quantity of each material stored in each tank and container;
 - A Material Safety Data Sheet (MSDS) for each material stored;
 - Records of the movement of all materials; and
 - Any other information required by the Commissioner?
- 16.129** Does the facility ensure that no tank involved in an explosion or fire is used for storage of petroleum without the written permission of the Commissioner? [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 55\(4\) and \(5\)\]](#)
- 16.130** Is each tank, piping and valve that is used in the storage of petroleum or flammable material marked with a distinct means of identification to indicate the petroleum or flammable materials with which the tank, piping or valve is intended to be used? [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 51\(2\)\]](#)
- 16.131** Does the facility ensure that no petroleum or flammable material is permitted to flow into any public drain or sewer? [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 56\(1\)\]](#)
- 16.132** If there is an accidental release of petroleum or flammable material into any public drain or sewer, does the facility have the affected area cleaned up and restored to normal as soon as practicable? [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 56\(2\)\]](#)

- 16.133** Are all containers for storing or transporting petroleum or flammable material designed and constructed in accordance with an accepted code of practice and other specifications as directed by the Commissioner? [[*Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 48*](#)]

Notes: All containers that are used for the storage of petroleum must be constructed and inspected in accordance with internationally acceptable standards and, affixed with labels approved by the Commissioner. [[*Code of Practice on Pollution Control, Section 5\(a\)\(i\)*](#)]

Some of these internationally acceptable standards include, but are not limited to standards such as the IMDG, ADR and Singapore's [*SS 586:2008 – Hazard Communication for Hazardous Chemicals and Dangerous Goods*](#). However, design and construction criteria of containers are beyond the scope of this protocol and therefore have not been covered.

- 16.134** Is every container used to store petroleum or flammable materials affixed with the appropriate emergency information panel(s) and/or warning label(s), and are a sufficient number of emergency information panels installed at the approved storage area? [[*Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 46\(1\)-\(2\)*](#)]

Notes: Required emergency information panels and warning labels are set forth in Singapore Standard [*SS 586:2008 - Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods*](#). The auditor should obtain a copy of this Standard from SPRING Singapore.

See Section 14.0 of this protocol for class and risk labels associated with the transport of petroleum and flammable materials.

- 16.135** Does the facility ensure that emergency information panel(s) and/or warning label(s) meet the following requirements: [[*Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 46\(3\)*](#)]

- Made of material that is weather and corrosion resistant;
- Indelibly marked;
- Rigid or fixed to be rigid;
- Marked on or securely attached to the container in a substantially vertical plane; and
- Kept clean and free from obstruction?

Notes: If the means of attachment of the emergency information panel and/or warning label is by a frame then the frame must carry no other emergency information panels or labels. [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 46\(3\)\(d\)\]](#)

- 16.136** Are all containers that are no longer used for the storage of petroleum or flammable material kept securely closed and stored only in licensed premises or in a place approved by the Commissioner? [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 50\]](#)
- 16.137** Have all cylinders used to store Class 0 petroleum been inspected and/or passed any tests specified in an accepted code of practice, and are they marked with the date of the tests and/or inspections? [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 52\(1\) and \(2\)\]](#)
- 16.138** Does the facility ensure that the name of the supplier and the information stamped on any cylinder that is used to store Class 0 petroleum is not altered, modified or defaced, has no other information added to it, and is not partly removed, erased or obliterated? [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 52\(3\)\]](#)
- 16.139** Does the facility ensure that the following requirements with regard to Class 0 cylinders are met: [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 52\(5\) and \(6\)\]](#)
- All cylinders are requalified periodically for continued service, in accordance with an approved code of practice; and
 - The maximum gross weight of cylinders containing Class 0 petroleum that are transported from the bottling plant to a centralized store does not exceed 10,000 kilograms?
- 16.140** If the facility operates a petroleum or flammable material dispensing station on site, does it ensure that the following requirements are in place: [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 28\(1\)\]](#)
- No person other than a person authorized by the licensee is allowed to operate any dispensing equipment at the station;
 - Dispensing from a tanker into any storage tank is not conducted except under the close supervision of a person who has knowledge of and experience with the dispensing operation;

- Dispensing into any storage tank of the dispensing station is only conducted if the tank has been checked immediately prior to dispensing and found to be capable of receiving the material without overflowing and any opening for the measurement of the liquid level in the storage tank has been closed;
- Petroleum or flammable material is not dispensed into the fuel tank of any vehicle while that vehicle's engine is running;
- The maximum quantity of petroleum that is dispensed into a container (other than a vehicle fuel tank) does not exceed 20 liters at any one time unless the written approval of the Commissioner has been obtained;
- The maximum quantity of petroleum or flammable material that is dispensed into a container does not exceed that specified by the Commissioner, unless the written approval of the Commissioner has been obtained;
- No vehicle used to transport petroleum or flammable material is parked within the dispensing station except for the purpose of refueling or dispensing;
- No lighted candle, lighted cigarette, burning of joss sticks, joss paper or any other naked light, fire or flame is permitted within the precincts of a dispensing station at any time;
- Warning notices stating “Switch Off Engine,” “No Smoking,” and “No Naked Lights” are prominently displayed at the dispensing area;
- Security barriers in the form of permanent and removable bollards with thick chains are installed and used at all entrances and exits of the petroleum filling station during all refilling operations involving tankers, if ordered by the Commissioner;
- All access points to all underground petroleum or flammable material storage tanks are secured by means of locking devices or other security measures to prevent unauthorized access;
- Sufficient numbers of closed circuit cameras are installed at the petroleum or flammable material dispensing station to cover the forecourt, backcourt, workshop, dispensing areas and other critical areas; and
- The facility complies with any other directions of the Commissioner relating to fire safety or the storage, transportation, dispensing or handling of petroleum?

16.141 If the facility experienced a loss, theft, leakage, accident or accidental discharge of petroleum or flammable material, did it take the following steps: [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 55\(1\) through \(3\)\]](#)

- Implemented the Emergency Response Plan (see the Subsection entitled, “Petroleum and Flammable Materials - Emergency Response Plans”);
- Informed the Commissioner of the incident;
- Took the necessary actions to have the affected areas and resources decontaminated, cleaned and restored to normal; and
- Provided a detailed written report to the Commissioner as soon as practicable containing the following information:
 - Circumstances leading to the incident;
 - Immediate actions and mitigating measures taken;
 - Measures taken to restore the affected areas; and
 - Measures taken to prevent a recurrence of a similar nature?

XIV. Petroleum and Flammable Materials - Import

16.142 If the facility imports any class of petroleum or any flammable liquid, does it comply with the following requirements: [\[Fire Safety Act, Section 35A\]](#)

- It obtains a valid license from the Commissioner to do so, if required by the regulations (see Question [16.123](#));
- The importation is in accordance with the provision of the license and every condition specified therein; and
- The importation is in the quantity, manner, and under the conditions that are prescribed?

Notes: Flammable material means any substances specified in Appendix 13-B in Section 13.0 of this protocol.

16.143 Has the facility obtained an import license if it intends to import quantities of petroleum or flammable materials greater than the following: [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 15 and Second Schedule\]](#)

- Import by land of petroleum in excess of:
 - Class 0 petroleum - Total of 130 kg (gross weight) in not more than 2 cylinders;
 - Class I petroleum - 20 liters;
 - Class II petroleum - 200 liters; or
 - Class III petroleum - 200 liters; or
- Import by land of flammable material in excess of:
 - Solid flammable material - 10 kg;
 - Liquid flammable material - 20 liters; or
 - Gaseous flammable material - 130 kg (gross weight) in not more than 2 cylinders?

16.144 Does the facility ensure that every container used for the import of petroleum or flammable materials in excess of the quantities given in Question [16.123](#) is designed, constructed, maintained and labeled in accordance with an approved code of practice? [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 16\]](#)

16.145 Does the facility meet the following import requirements: [\[Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 17\]](#)

- Accepts delivery of the imported petroleum or flammable materials only at the following locations:
 - A wharf in Singapore, if the material is imported by water;
 - An air cargo terminal in Singapore if the material is imported by air; or
 - Tuas Checkpoint or another place specified by the Commissioner as a substitute, if the material is imported by land; and
- Does not accept delivery of petroleum or flammable material by rail?

XV. Petroleum and Flammable Materials - Emergency Response Plans

- 16.146** Does the facility maintain an up-to-date Emergency Response Plan, prepared in accordance with guidelines issued by the Commissioner, to deal with any spillage, leakage, accidental discharge or emergency which may arise from the storage of petroleum and/or flammable materials? [*Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 27(1) and (2)*] **<RECORD KEEPING>**

Notes: Guidance on issuing an emergency response plan (ERP), prepared by the Ministry of the Environment, is available at http://app2.nea.gov.sg/mgmt_hazsub.aspx (last accessed in September 2010). This gives technical guidance on preparation of impact zones, formats for emergency plans and standard operating procedures for response, and the facility obligations during an emergency.

- 16.147** Does the Emergency Response Plan contain the following information: [*Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 27(4)*]

- Identification of likely accident scenarios and establishment of likely impact zones;
- Notification and activation procedures;
- Response actions to contain and control the release and to mitigate the impact zones;
- Monitoring of the affected areas, including those off site;
- Procedures for decontamination and clean-up of the affected area;
- Names of personnel with their assigned roles and responsibilities for dealing with the emergency (including decontamination and clean-up);
- List of emergency response equipment available for dealing with the emergency, including protective gear, fire-fighting equipment, oversized drums, emergency containers or tankers, absorbents, neutralizing agents, monitoring equipment and clean-up equipment; and
- Any other information required by the Commissioner?

- 16.148** Does the facility update its Emergency Response Plan and submit it to the Commissioner for approval within one month of any change that may affect the validity or effectiveness of the plan? [*Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 27(6)*]

- 16.149** Does the facility amend, update or test the Emergency Response Plan at any time it is requested to do so by the Commissioner? [[*Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 27\(5\) and \(7\)*](#)]
- 16.150** Does the facility ensure that all persons working at the premises are familiar with the contents of the Emergency Response Plan? [[*Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 27\(3\)*](#)]
- 16.151** Does the facility ensure that adequate trained personnel and equipment are available on the premises at all times to deal with emergencies? [[*Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 27\(8\)*](#)]
- 16.152** Does the facility implement the Emergency Response Plan in the event of any emergency involving the petroleum or flammable material stored at the facility? [[*Fire Safety \(Petroleum and Flammable Materials\) Regulations, Regulation 27\(9\)*](#)]

XVI. Piping Systems - Safety Considerations

- 16.153** Are all materials used in piping systems capable of resisting the chemical action of the substances handled? [[*CP 27:1999, Section 1.12.1*](#)]
- 16.154** Are all pipes, fittings and valves used in any piping system designed to withstand the maximum pressure and temperature to which they may be subjected? [[*CP 27:1999, Section 1.12.2*](#)]
- 16.155** Are all piping systems installed so as to prevent siphoning of the contents of any vessel? [[*CP 27:1999, Section 1.12.3*](#)]
- 16.156** Is all pipework sufficiently flexible to allow for the total expansion and contraction that may occur during use? [[*CP 27:1999, Section 1.12.4*](#)]
- 16.157** Is all pipework supported and secured so that no undue strain is put on the installation at any time? [[*CP 27:1999, Section 1.12.5*](#)]
- 16.158** Is all pipework securely anchored at locations between bends or expansion joints with the remainder of the piping carried on adjustable hangers or properly aligned supports? [[*CP 27:1999, Section 1.12.5*](#)]
- 16.159** Is pipework run in such a way that the pipework and the associated valves are not hidden from view and that the pipework and associated valves are accessible for maintenance? [[*CP 27:1999, Section 1.12.6*](#)]

- 16.160** Is all pipework above floors, platforms, gangways, common corridors and stairways not less than 2.3 meters between the lowest part of the pipe or any fitting and the floors, platforms, gangways, common corridors or stairways below? [[CP 27:1999, Section 1.12.7](#)]
- 16.161** Is all exposed refrigerant pipe and drainpipe along common corridors properly insulated against condensation? [[CP 27:1999, Section 1.12.8](#)]
- 16.162** For pipework running across areas not designated as access areas, is ample clearance provided between the lowest point of the pipework and the floor so that there will be no accumulation of any fluid and so that maintenance or servicing work on the pipework can be carried out? [[CP 27:1999, Section 1.12.9](#)]
- 16.163** Are all piping, fittings and valves of piping systems distinctly colored and marked in conspicuous places for identification of the contents, using either names or abbreviations or chemical symbols, or a combination of these? [[CP 27:1999, Section 1.12.11\(a\)](#)]
- 16.164** Does the color marking of piping and associated fittings conform to the requirements of Annex C of [CP 27:1999](#)? [[CP 27:1999, Section 1.12.11\(b\)](#)]

Notes: Annex C of [CP 27:1999](#) specifies the colors for identifying different types of piping (air, water, steam, oils, etc.), safety colors for piping and other marking requirements for the contents of pipes.

- 16.165** Are the color markings for identification of piping applied by one of the following: [[CP 27:1999, Section 1.12.11\(c\)](#)]

- Painted on the pipe over the whole length;
- Painted on the pipe as a band, or applied by wrapping an adhesive band of the basic identification color around the pipe, over a length of about 150 millimeters, depending on the diameter of the pipe; or

Notes: If the pipe is banded by painting or applying an adhesive band, the decorative or protection color of the pipe may not be any of the other basic identification colors. [[CP 27:1999, Section 1.12.11\(d\)](#)]

- An adhesive label of the basic identification color over a length of about 150 millimeters?

- 16.166** Is the basic identification color for piping placed at all junctions, at both sides of valves, service appliances, bulkheads, wall penetrations and at any other place where identification is necessary? [[CP 27:1999, Section 1.12.11\(e\)](#)]
- 16.167** Does every required pipe marking include all of the following: [[CP 27:1999, Section 1.12.11\(f\)](#)]
- Identification color(s) as specified in Question [16.164](#);
 - The nature of the contents, as specified in Question [16.163](#); and
 - The direction of flow, as indicated by a white or black arrow that is in direct contrast to the basic identification color?
- 16.168** Are the precautions to be taken in handling the contents of any piping posted conspicuously at distribution points along the piping system? [[CP 27:1999, Section 1.12.12](#)]

XVII. Storage of Compressed Gases

- 16.169** If the facility utilizes seamless metal gas containers (cylinders) for the storage of compressed gases other than dissolved acetylene, are the following requirements met: [[CP 12: Part 1:2000, Sections 4 through 8](#)]
- The gas cylinders are inspected before and after filling;
 - The gas cylinders are also periodically inspected in accordance with the schedule listed in Table 1 (Intervals between periodic inspections and hydraulic tests) of [CP 12: Part 1:2000](#);
 - The periodic tests include a sound test, a check for inadequate markings, an internal and external inspection, weighing, a check of the container neck threads, a hydraulic pressure test, a proof pressure test, and a hydraulic volumetric expansion test;
 - The gas cylinders are stamped with the date of manufacture or the last periodic test date (or a secondary method of recognition such as colored rings between the valve and the neck of the containers); and
 - Cylinders determined unsuitable for further service are destroyed by the testing station?

Notes: Dissolved acetylene is an industrial fuel gas normally produced by the addition of calcium carbide to water and dissolved into a solvent contained in a seamless or welded steel container filled with a porous mass, either monolithic, granular or fibrous.

16.170 If the facility utilizes cylinders for the storage of dissolved acetylene gas, does it ensure the following requirements are met: [\[CP 12: Part 2:1998, Sections 4 through 7\]](#)

- The dissolved acetylene cylinders are inspected before and after filling;
- The gas cylinders are also periodically inspected in accordance with the schedule listed in Table 1 (Periods between internal examinations of dissolved acetylene containers) of [CP 12: Part 2:1998](#);
- The periodic inspections include a check for inadequate markings, an internal and external inspection, a check of the container valves, neck threads, container fittings, an inspection of porous mass, weight, and solvent content;
- The gas cylinders are stamped with the date of manufacture or the last periodic test date on a colored ring around the shank of the cylinder valve between the valve and the cylinder neck; and
- Cylinders determined unsuitable for further service are destroyed by the testing station?

XVIII. Storage of Bulk Liquid Oxygen

Notes: The auditor should complete this subsection if the facility contains a liquid oxygen storage installation to which the supply of oxygen is delivered by mobile equipment, where the capacity of the liquid oxygen storage installation is more than 500 liters but less than 100,000 liters. A "bulk liquid oxygen storage installation" is the total assembly of liquid storage containers together with their associated gaseous storage, evaporating equipment and controls, connected in service, in a static position, to supply a user with liquid or gaseous oxygen. [\[CP 34:1985, Section 2\]](#)

16.171 Does the facility ensure the following requirements are met with respect to a liquid oxygen storage installation: [\[CP 34:1985, Sections 5 - 12\]](#)

- The installation is located in a separate, exclusive location;
- The base of the installation site is raised to avoid ponding (pooling) and is made of concrete or a similar inorganic and non-porous substance;

- The installation is clearly defined and surrounded by an open design and non-combustible barrier equipped with clearly marked emergency exits;
- The equipment has been installed, tested and commissioned to the satisfaction of the oxygen supplier;
- The installation avoids, as far as possible, pipelines carrying flammable liquids or gases (if unavoidable, the facility ensures the pipeline is continuous, is not located in a trench, and is positioned as far as possible from any likely source of liquid oxygen spillage);
- The installation is not situated on top of any existing building;
- If the installation cannot be situated away from an existing building and the installation space forms part of an existing building, a separate compartment has been erected at ground level of non-combustible material from floor to ceiling or roof, one of the walls is an outside wall, wire meshed if necessary to provide ventilation, and no trenches, manholes, cable ducts, gullies or traps are allowed in the enclosure;
- The minimum distances from any bulk liquid oxygen storage container to various types of exposures (measured in the most direct line) are at least those indicated in [CP 34:1985](#);

Notes: [CP 34:1985](#) provides the minimum distances to be maintained between a bulk liquid oxygen storage container and various exposure points, such as the property boundary, buildings, flammable and combustible liquid storage areas, electrical substations or transformers, etc.

- The installation is designed so that any tanker used for filling the installation is not required to be in a walled enclosure from which the escape of liquid or heavy vapor is restricted;
- The installation is positioned so that it is not necessary for a tanker to stand on a public highway or public ground while in the process of transferring liquid to or from a stationary container;
- Notices with the words "Liquid Oxygen" are prominently displayed at the installation;

- Signs prohibiting smoking, open flames and unauthorized personnel are prominently displayed at the installation; and
- Controls for emergency operation of the installation are clearly labeled and up-to-date and legible emergency operating instructions are displayed immediately adjacent to the emergency controls?

XIX. Radioactive Materials - General

Notes: In this subsection, the following definitions apply: [[*Radiation Protection \(Ionising Radiation\) Regulations, Regulation 2*](#)] and [[*Radiation Protection Act 2007, Section 2 and Schedule*](#)]

- “ALI” means the annual limit on intake, which is the activity of a radionuclide which, if taken alone into the human body, would irradiate an individual to the dose limit specified (see the Subsection entitled, “Radiation - General” in Section 15.0 of this protocol);
- “Becquerel” means the unit of radioactivity defined as one disintegration per second and is designated by the symbol Bq;
- “Gigabecquerels” means a thousand million becquerels and is abbreviated by GBq;
- “Ionising radiation” means electromagnetic radiation and corpuscular radiation which give rise to the formation of ion pairs on interaction with matter;
- “Irradiating apparatus” means:
 - Any apparatus that is capable of producing ionizing radiation;
 - Any apparatus capable of producing non-ionizing radiation, as listed in the [*Radiation Protection \(Non-Ionising Radiation\) Regulations*](#), First Schedule, as shown in Table [16-3](#), whose power output exceeds the exempt amount listed in the table; or
 - Any component or accessory to an apparatus as described above;
- “Kilobecquerels” means 1,000 becquerels, and is abbreviated by kBq;
- “Megabecquerels” means one million becquerels and is abbreviated by mBq;

- "Non-Ionising radiation" means electromagnetic radiation and fields with wavelengths greater than 100 nanometers and all acoustic radiations and fields with frequencies below 16 Hz and above 16 kHz;
- "Nuclear material" means:
 - Any source material (not being ore or ore residue), which includes uranium containing the mixture of isotopes occurring in nature, uranium depleted in the isotope 235, thorium, and any of the foregoing in the form of metal, alloy, chemical compound or concentrate, or any other material containing one of more of the foregoing in such concentration as the International Atomic Energy Agency (IAEA) Board of Governors shall from time to time determine; or
 - Any special fissionable material (excluding source material), which includes plutonium-239; uranium-233; uranium containing the isotopes 235 or 233 or both in an amount such that the abundance ratio of the sum of these isotopes to the isotope 238 is greater than the ratio of the isotope 235 to the isotope 238 occurring in nature; or any material containing one or more of the foregoing;
- "Radioactive material" means any article containing a radioactive substance giving it a specific or total radioactivity exceeding the prescribed level, and includes any article containing any nuclear material;
- "Radioactive substance" means radionuclide or mixture of radionuclides, either alone or in chemical combination with other elements;
- "Radionuclide" means an isotope of any element which spontaneously emits any ionizing radiation; and
- "Sievert" is the units of the equivalent dose, which is the sum of the product of the absorbed dose in gray and the radiation weighting factor for all the different types of radiation incident on a tissue or organ (see Section 15.0 of this protocol for definitions).

The licensing provisions of this subsection do not apply to: [\[Radiation Protection Act 2007, Section 5\(1\), 6\(1\)\]](#); [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 3\]](#) and [\[Radiation Protection \(Transit and Transshipment\) \(Exemption\) Regulations 2007, Section 2\]](#)

- Substances in transit through Singapore;
- A natural radioactive substance of any equivalent specific radioactivity not exceeding that of natural potassium;

- A radioactive substance having an activity or activity concentration not exceeding that in the First Schedule of the [Radiation Protection \(Ionising Radiation\) Regulations](#) with respect to the particular radionuclide, unless it is intentionally added to foodstuffs, fertilizers, pharmaceutical goods, cosmetics or toys, or is disposed of as radioactive waste;

This Schedule specifies the maximum activities and activity concentrations of radionuclides exempted from the licensing requirements. It may be accessed at <http://app2.nea.gov.sg/data/cmsresource/20090316338626897384.pdf> (last accessed in September 2010).

- Any person who has in their possession or under their control not more than 3 sealed sources, each of which contains any radioactive substance not exceeding 175 kBq, for the sole purpose of checking or calibrating a particular radiation survey or monitoring instrument if the complete details of the radioactive substance are submitted to the Chief Executive of the Health Sciences Authority, except that the person is still responsible for the safe storage and use of the substance;
- Any timepiece, instrument, or device containing self-luminous elements, except during the manufacture or repair of the self-luminous elements themselves and providing the timepiece, instrument or device contains no more than:
 - 35 kBq of radium-226, 105 kBq of americium-241, 70 mBq of promethium-147 or 3.5 GBq of tritium, where the luminescent substance is substantially insoluble in water and is in the form of glass, vitreous enamel or similar substance, or in the form of a paint or film which adheres to the item during normal use; or
 - 700 GBq of tritium or 9 GBq of krypton-85 in the form of radioactive gas;
- Any electrical equipment which is not primarily intended to produce ionizing radiation and which does not produce a radiation level of more than 5 microsievert per hour at a distance of 5 cm from any accessible surface;
- Any video display unit or domestic-type television set or television equipment used for projection purposes, closed circuit applications and the like which conforms to the standards of the International Commission on Radiological Protection or any other equivalent international standards or recommendations; or
- Any radioactive material or irradiating apparatus carried as part of the equipment of any vessel or aircraft coming into Singapore.

This subsection does apply to the testing or servicing of video display units in the course of production.

In this subsection, “Director-General” means the Director-General of Environmental Protection appointed under the [Environmental Protection and Management Act](#). [\[Radiation Protection Act 2007, Section 2\]](#)

The handling, storage and disposal of radioactive waste is covered in Section 4.0 of this protocol.

- 16.172** If the facility imports, stores, manufactures, transports, sells or exports any radioactive material, does it have a license to do so? [\[Radiation Protection Act 2007, Section 5\]](#)
- 16.173** If the facility manufactures, sells, or otherwise deals in, imports or exports, or has control of an irradiating apparatus, does it have a license to do so? [\[Radiation Protection Act 2007, Section 6\(1\)\]](#) and [\[Radiation Protection \(Non-Ionising Radiation\) Regulations, Regulation 7\]](#)
- 16.174** If the facility has a license for either radioactive materials or radioactive apparatus and the facility changes its address, does it notify the Director-General within two weeks of the change of address? [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 11\]](#) and [\[Radiation Protection \(Non-Ionising Radiation\) Regulations, Regulation 12\]](#)
- 16.175** Does the facility give immediate notice to the Director-General of every sale of a licensed irradiating apparatus together with the name and address of the person to whom it was sold? [\[Radiation Protection Act 2007, Section 6\(2\)\]](#)
- 16.176** Does the facility give immediate notice to the Director-General of every purchase of a licensed irradiating apparatus together with the name and address of the person from whom it was purchased? [\[Radiation Protection Act 2007, Section 6\(3\)\]](#)
- 16.177** Does the facility obtain prior written approval from the Director-General before disposing of irradiating apparatus, whether in a working condition or otherwise? [\[Radiation Protection Act 2007, Section 6\(4\)\]](#)

XX. Radioactive Materials - Ionising Radiation

Notes: The notes and definitions at the beginning of the Subsection entitled, “Radioactive Materials – General” also apply to this subsection.

- 16.178** Does the facility ensure the following requirements are met with respect to the storage of radioactive materials: [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 24\(1\)\]](#)
- Radioactive materials are stored in a manner that will prevent unauthorized individuals from gaining access to them;

- Radioactive materials are not stored in a manner that will allow a radiation level exceeding 0.5 microsievert per hour outside the defined area in which the radioactive materials are stored; and
- Radioactive materials are not stored in a manner that will cause any person other than a radiation worker to receive a radiation dose in excess of 20 microsieverts in a period of seven consecutive days?

16.179 Does the facility ensure that all vaults or rooms where radioactive materials are stored, kept, used or handled and where any radionuclide in gaseous, vapor or aerosol form may be emitted, are ventilated so that the radionuclide is not a radiation hazard and will not be present at any time in the vault or room in a concentration such that inhalation or ingestion by an individual exceeds one-twentieth of the ALI specified for that radionuclide (see the Subsection entitled, "Radiation - General" of Section 15.0 of this protocol)? [[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 24\(2\)](#)]

16.180 If radioactive materials are stored temporarily (or when not in use) in a workroom, laboratory, or another place where an individual is regularly or frequently present, are they are enclosed in containers or otherwise shielded so that the following conditions are met: [[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 24\(3\)](#)]

- The average radiation level at 5 cm from the surface of each container does not exceed 40 microsieverts per hour and the maximum radiation level does not exceed 200 microsieverts per hour; and
- The average radiation level at 1 meter from the center of each source does not exceed 4 microsieverts per hour and the maximum radiation level does not exceed 20 microsieverts per hour?

16.181 Where there is any possibility that a chemical, radiation, or other action might weaken or rupture the container of radioactive material sufficiently to cause leakage from the container, is the container provided with a secondary tray or catchment adequate to retain the entire amount of the radioactive material stored in the container? [[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 25\(1\)](#)]

16.182 Are all storage containers for radioactive materials in excess of 35 GBq designed to meet the following requirements: [[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 25\(2\)](#)]

- Resistant to fire, shock or stress;

- Able to withstand any temperature that may be reasonably anticipated; and
- Structurally sound, with regard to corrosion, radiation, temperature effects and chemical or other action that may develop over the period of intended storage or use?

16.183 Has the facility made provisions to minimize the radiation hazard to any individual who might perform emergency work in or around the area where radioactive material is stored in the event of fire, flood or any other catastrophe or emergency? [[*Radiation Protection \(Ionising Radiation\) Regulations, Regulation 25\(3\)*](#)]

16.184 Is every irradiating apparatus labeled with a label that is securely attached to the apparatus and that displays the standard radiation hazard symbol and the words “DANGER - RADIATION. This apparatus produces radiation when energized.” immediately adjacent to the symbol? [[*Radiation Protection \(Ionising Radiation\) Regulations, Regulation 19\(1a\)*](#)]

Notes: See the Fourth Schedule of the [*Radiation Protection \(Ionising Radiation\) Regulations*](#) for the standard radiation hazard symbol. The [*Radiation Protection \(Ionising Radiation\) Regulations*](#) are available at:

<http://app2.nea.gov.sg/data/cmsresource/20090316338626897384.pdf> (last accessed in September 2010).

16.185 Is every irradiating apparatus and container that contains a radioactive substance labeled with a label that is securely attached to the apparatus or the container that displays the following information: [[*Radiation Protection \(Ionising Radiation\) Regulations, Regulations 19\(1b\) and 20*](#)]

- The standard radiation hazard symbol together with the words “DANGER - RADIOACTIVE” immediately adjacent to the symbol; and
- A listing of the kind and activity of the radioactive substance(s) in the irradiating apparatus and the date of measurement of the activity?

16.186 Does every area where a radiation hazard may exist display a notice containing the standard radiation hazard symbol in the following places: [[*Radiation Protection \(Ionising Radiation\) Regulations, Regulation 21\(1\)*](#)]

- Near each place where any radioactive material or any irradiating apparatus is used;
- At each entrance to any place where any radioactive material is used or stored; and
- At each entrance to any place where any irradiating apparatus is used?

Notes: These area signs are in addition to the labels on the apparatus or containers of radioactive materials themselves. [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 20\(1\)\]](#)

The area labeling requirements do not apply to sealed sources that give a radiation level not exceeding 0.1 microsievert per hour at one meter away from the center of the source. [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 20\(2\)\]](#)

16.187 If the facility has any premises where the total amount of radioactive materials kept or stored exceeds 35 GBq, are all main entrances to the premises labeled with a notice that is clearly visible to any individual entering the premises that states that radioactive materials are kept or stored on the premises? [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 21\(3\)\]](#)

16.188 Do all labels and notices required in Question [16.184](#) through Question [16.187](#) meet the following conditions: [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulations 22 and 23\]](#)

- Are as large as is practicable in each circumstance;
- Are not used in any areas or used to label any substances that are not a radiation hazard; and
- Are immediately removed when any radiation hazard ceases to exist?

16.189 Does the facility keep a book containing a record of the following information in respect to radioactive materials: [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 26\(1\)\]](#) **<RECORD KEEPING>**

- The date of receipt;
- The nature and form of the radioactive material and the date received;
- The activity of the radioactive material and the date specified by the manufacturer;
- The whereabouts of the radioactive material, kept up to date on each working day; and
- If the radioactive material is a sealed source:
 - The distinguishing number or other identifying mark; and
 - The date and the manner of disposal of the sealed source; or

- If the radioactive material is an unsealed source:
 - The quantity used each time and the date and purpose of use; and
 - The date and the manner of disposal of the radioactive material or any portion of it?

Notes: The record keeping requirements of this question do not apply to radioactive materials in the course of their manufacture or if stored or unused after manufacture.

[\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 26\(2\)\]](#)

- 16.190** If radioactive materials are reported as lost or mislaid, does the facility ensure that immediate steps are taken to find the radioactive material, and if the material is not accounted for within 24 hours, the Director-General is notified immediately? [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 26\(4\)\]](#)

Notes: It is the duty of any radiation worker to report lost or missing radioactive material to the person named in the license for use and storage of radioactive materials, or the person designated as responsible for fulfilling the license conditions. It is the licensee's responsibility to conduct a search for the materials and, if the radioactive material is not accounted for, to notify the Director-General. [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 26\(3\) and \(4\)\]](#)

- 16.191** If any sealed source is transported within the facility (per the license) does the transport meet the following conditions: [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 27\]](#)

- Material is transported in a suitable container or by other appropriate methods so that the same requirements for radiation levels as required in Question [16.180](#) are met, unless the Director-General directs otherwise;
- Material is transported by or under the immediate supervision of the license holder or a radiation worker authorized by the license holder; and
- The individual receiving the material is made aware that he/she is receiving a sealed radioactive source?

- 16.192** If any unsealed radioactive source is transported within the facility (per the license) does the transport meet the following conditions: [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 28\]](#)

- Material is enclosed within a suitable container adequately shielded so that the same requirements for radiation levels as required in Question [16.180](#) are met, unless the Director-General directs otherwise;
- Material is transported by or under the immediate supervision of the license holder or a radiation worker authorized by the license holder; and
- The material has a tag attached to the container giving the following information:
 - Name of the isotope;
 - Nature, physical and chemical form; and
 - Activity with date?

16.193 Does the facility ensure that every person who has a sealed source under their control does the following, unless the Director-General directs otherwise: [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 29\(1\)\]](#)

- Ensures that a wipe test to test for leakage of radioactive substance is made by a qualified individual, at least every 12 months, of the following:
 - The bonding of a sealed source that does not have an immediate container; and
 - Every container in which such a sealed source is permanently installed but which does not form part of the sealed source;
- Maintains a register containing the required particulars of every wipe test carried out as above; and **<RECORD KEEPING>**
- Informs the Director-General immediately if any wipe test carried out as above is positive?

16.194 If any radioactive substance is leaking, or is likely to leak from the immediate container or the bonding which forms part of a sealed source, or in the event that the immediate container or the bonding which forms part of a sealed source is broken, are the following steps taken: [\[Radiation Protection \(Ionising Radiation\) Regulations, Regulation 29\(2\)\]](#)

- The Director-General is informed immediately;
- All practicable measures are taken forthwith to safeguard every individual present in the vicinity of the sealed source, including, where necessary, the immediate evacuation of all appropriate areas;

- The immediate container or bonding is placed in a leak-proof container forthwith and is not brought into use until all necessary repairs have been done; and
- Effective steps to decontaminate any areas affected by the radioactive substance are taken as soon as practicable by or under the supervision of the license holder or an individual approved by the Director-General as qualified to do so, with any person undertaking the decontamination being properly equipped for the purpose?

XXI. Biological Agents and Toxins

Notes: This subsection applies to the biological agents and toxins listed in the First through Fifth Schedules of the [Biological Agents and Toxins Act](#), see Appendix 14-F in Section 14.0 of this protocol.

The following definitions apply to the subsections on biological agents: [\[Biological Agents and Toxins Act, Sections 2 and 4\]](#)

- "Biological agent" means one of the agents listed below that is capable of causing death, disease or other biological malfunction in a human:
 - Any micro-organism (including any bacterium, virus, fungus, rickettsia and parasite);
 - Any infectious substance (including any prion); and
 - Any component of a micro-organism or an infectious substance (but not including any toxin);
- "Excluded purposes" means:
 - Disposal of a biological agent or toxin by a hazardous waste contractor; or
 - Use or possession of a finished cosmetic or medicinal product consisting of a toxin by an authorized manufacturer, supplier, seller or dispenser of finished cosmetic or medicinal products; and
- "Toxin" refers to a poison extracted from a micro-organism.

Certain facilities must be certified by independent entities in order to receive an authorization. A list of certification entities approved by the Health Services Biosafety Division is available at: <http://www.biosafety.moh.gov.sg/home> (last accessed in August 2010).

16.195 If the facility possesses a First or Second Schedule biological agent, does it have an authorization to do so from the Director of Medical Services? [[*Biological Agents and Toxins Act, Sections 6\(2\), 14\(1\)*](#)]

16.196 If the facility is granted approval to possess a First or Second Schedule biological agent, does it ensure that the agent is kept or used only at the place specified in the authorization? [[*Biological Agents and Toxins Act, Sections 6\(4\), 15\(3\)*](#)]

Notes: This requirement does not apply to someone who transports or stores a Second Schedule biological agent pending delivery of the agent to the person who will import the agent into Singapore, or export the agent in the course of transshipment. It also does not apply to transport that is incidental to other activities. [[*Biological Agents and Toxins Act, Section 15\(7\)*](#)]

16.197 If the facility conducts or procures any large-scale production of a First or Third Schedule biological agent, does it have an authorization to do so from the Director of Medical Services? [[*Biological Agents and Toxins Act, Sections 7\(1\)\(a\), 23\(1\)\(a\)*](#)]

16.198 Is any large-scale production of First or Third Schedule biological agents conducted in accordance with the conditions and at the place specified in the authorization? [[*Biological Agents and Toxins Act, Sections 7\(1\)\(b\), 21\(1\)\(b\)*](#)]

16.199 Does the facility ensure that it does not carry out or procure any large-scale production of a Second Schedule biological agent? [[*Biological Agents and Toxins Act, Section 16\(1\)*](#)]

16.200 If the facility imports or transships a First, Second or Fourth Schedule biological agent, or a Fifth Schedule toxin, does it have a permit from the Director of Medical Services to do so? [[*Biological Agents and Toxins Act, Sections 8\(1\), 17\(1\), 25\(1\), 32\(1-2\)*](#)]

16.201 Is any import, export or transshipment carried out in accordance with the conditions of the facility's permit? [[*Biological Agents and Toxins Act, Sections 8\(2\), 17\(2\), 25\(1\), 32\(1-2\)*](#)]

Notes: A permit for import or transshipment of a First, Second or Fourth Schedule biological agent or a Fifth Schedule toxin is valid only for the particular consignment for which the application has been made. [[*Biological Agents and Toxins Act, Sections 8\(4\), 17\(4\), 25\(2\), and 32\(4\)*](#)]

16.202 If the facility does not receive a consignment of First Schedule (Part II) or Second Schedule, biological agents, or of a Fifth Schedule toxin, to which an import permit relates, does the facility immediately notify the Director of Medical Services? [[*Biological Agents and Toxins Act, Sections 9\(1\), 18\(1\), and 33\(1\)*](#)]

Notes: The facility must notify if a shipment is not received with 24 hours of the time it might reasonably be expected to be received. [*Biological Agents and Toxins Act, Sections 9(2), 18(2), and 33(2)*]

16.203 If the facility holds an import permit for a First or Second Schedule biological agent or a Fifth Schedule toxin and the biological agent or toxin must be stored pending delivery or transshipment, does the facility ensure that the biological agent or toxin is stored in a safe and secure place, and that the storage is carried out in accordance with any prescribed requirements? [*Biological Agents and Toxins Act, Sections 10(1-2), 19(1-2), and 34(1-2)*]

16.204 Does the facility ensure that it does not transfer a First or Second Schedule biological agent, or a Fifth Schedule toxin, to anyone unless they hold the proper approval or authorization (full use or excluded purposes) or are located outside of Singapore? [*Biological Agents and Toxins Act, Sections 11(1-2), 20(1-2), and 35(1-2)*]

16.205 If the facility transfers a First Schedule (Part II) or Second Schedule biological agent, or a Fifth Schedule toxin, does it notify the appropriate parties of the appropriate information, as follows: [*Biological Agents and Toxins Act, Sections 12(1), 21(1), and 36(1)*]

- The Director of Medical Services of the proposed transfer within the time specified by the Director;
- The transferee of the estimated time of receipt; and
- The carrier, prior to the dispatch of the agent, including informing them of the 24-hour emergency number that is monitored at all times by a person who has knowledge of the hazards and characteristics of the biological agent being transported, or who has immediate access to a person with this knowledge?

16.206 Does the facility ensure that it does not send or receive First, Second, Third, or Fourth Schedule biological agents, or Fifth Schedule toxins, through the mail or by public transportation? [*Biological Agents and Toxins Act, Sections 13(1), 22(1), 24(1), 26(1), and 37(1)*]

Notes: This requirement applies also to inactivated First or Second Schedule biological agents. [*Biological Agents and Toxins Act, Section 29(1)*]

16.207 If the facility inactivates or procures the inactivation of any First or Second Schedule biological agent, does it have an approval to possess the agent, and is the inactivation carried out in accordance with any method approved by the facility's biosafety committee? [*Biological Agents and Toxins Act, Section 27(1)*]

Notes: This question does not apply to inactivation in the course of decontaminating First or Second Schedule biological agent waste. [[Biological Agents and Toxins Act, Section 27\(2\)](#)]

- 16.208** If the facility imports an inactivated First or Second Schedule biological agent, does it have a permit to do so, and is the import carried out in accordance with the conditions of the permit? [[Biological Agents and Toxins Act, Section 28\(1\)](#)]

Notes: A permit for import of inactivated First or Second Schedule biological agents is not consignment-specific and allows importation of multiple consignments from a specified supplier. [[Biological Agents and Toxins Act, Section 28\(4\)](#)]

- 16.209** If the facility possesses a Fifth Schedule toxin, does it have an authorization from the Director of Medical Services? [[Biological Agents and Toxins Act, Section 31\(1\)](#)]

- 16.210** If the facility has an approval to possess a Fifth Schedule toxin, is the toxin used and stored only at the location(s) and under the conditions specified in the approval? [[Biological Agents and Toxins Act, Section 31\(3\)](#)]

Notes: This requirement does not apply to someone who transports or stores a Fifth Schedule toxin pending delivery to the person who will import the toxin into Singapore, or export the toxin in the course of transshipment. It also does not apply to transport that is incidental to other activities. [[Biological Agents and Toxins Act, Section 31\(6\)](#)]

XXII. Material Safety Data Sheets

Notes: Questions in this subsection that reference the [Guidelines on the Preparation of Material Safety Data Sheets \(MSDS\)](#) represent guidance information not specifically required under legislation. However, the Ministry of Manpower's Industrial Health Department prepared the guidelines and following them may provide a defense against charges of non-compliance.

"Hazardous substances" under the [Workplace Safety and Health Act](#) and its regulations are those specified in Part II of the Fifth Schedule to the [Workplace Safety and Health Act](#), as listed in Table 15-1 in Section 15.0 of this protocol. [[Workplace Safety and Health Act, Section 2](#)]

- 16.211** If the facility uses, handles or stores any hazardous substances, does it achieve compliance with the following requirements: [[Workplace Safety and Health \(General Provisions\) Regulations 2006, Regulation 43\(1\)](#)]

- It has obtained a safety data sheet (SDS) for the substance;

- It assesses the information in the SDS and takes precautionary measures to ensure the safe use of the substance; and
- It makes the SDS available to all persons at work in the facility who are liable to be exposed to the substance?

16.212 If the facility sells, is the agent of any seller, or procures for sale any hazardous substance for use in a professional setting, has an SDS for the substance been provided to the buyer giving accurate and adequate information, so far as is reasonably practicable, on the following: [[*Workplace Safety and Health \(General Provisions\) Regulations 2006, Regulation 43\(2\)*](#)]

- Identity of the substance;
- Safety and health hazards;
- Composition of and ingredients used in the substance;
- First-aid measures;
- Fire-fighting measures;
- Accidental release measures;
- Precautions to be taken and safe handling and storage;
- Exposure controls and personal protection needed;
- Physical and chemical properties;
- Stability and reactivity of the substance;
- Toxicological properties;
- Ecological information;
- Disposal considerations;
- Transport;
- Regulatory information; and
- Any other relevant information?

Notes: Any person who fails to provide an SDS or who provides inaccurate, inadequate or misleading information in an SDS is deemed to be guilty of an offence and is liable upon conviction to be fined. [[Workplace Safety and Health \(General Provisions\) Regulations 2006, Regulation 43\(3\)](#)]

While Appendix 3 of the [Guidelines on the Preparation of Material Safety Data Sheets \(MSDS\)](#) gives a summary of SDS key information items to be provided in order to ensure the completeness and accuracy of the SDS (available at <http://www.mom.gov.sg>, last accessed in August 2010), the newly issued [SS 586:2008 – Part 3 – Preparation of Safety Data Sheets \(SDS\)](#) provides more comprehensive information compatible with the Globally Harmonized System of Classification and Labeling of Chemicals and is the document now referenced by the Ministry of Manpower.

16.213 If the facility sells, is the agent of any seller, or procures for sale any hazardous substance for use in a professional setting, does it ensure that SDS issued by the facility conform to the following specifications: [[Guidelines on the Preparation of Material Safety Data Sheets \(MSDS\)](#)]

- Are written in English (with translations available if appropriate);
- Language is clear, simple and concise;
- No information items are left blank (use expressions such as “not applicable” or “not available” where appropriate);
- Abbreviations are not used, or, if they must be used, a legend is provided;
- All pages are numbered, with the total number of pages given on each page (i.e., page 1 of 3);
- The month and year of issue of the SDS is indicated on each SDS with the month written out, rather than a number designation; and
- Standard International units are used?

Notes: Non-standard but commonly used units such as degrees Celsius may be used. [[Guidelines on the Preparation of Material Safety Data Sheets \(MSDS\)](#)]

16.214 If the facility sells, is the agent of any seller, or procures for sale any hazardous substance for use in a professional setting, are all SDS reviewed and, if necessary, reissued under the following conditions: [[*Guidelines on the Preparation of Material Safety Data Sheets \(MSDS\)*](#)]

- Whenever there is a change in formulation which affects the properties of the substance, alters the form or appearance of the substance, or alters the mode of application of the substance;
- Whenever there is a change to the substance which alters its health and/or safety hazard or risk;
- Whenever new health and/or safety information becomes available;
- To reflect new regulations, standards, codes of practice or guidelines; and
- At least every 5 years, in the absence of review for any other reason?

16.215 Does every SDS issued cover all major uses for a substance? [[*Guidelines on the Preparation of Material Safety Data Sheets \(MSDS\)*](#)]

Table 16-1

Separation Distances

Part 1 - Separation Distances for Groups to Boundary (D3)/ Fixed Ignition Sources (S)

	Minimum Separation Distance (m) (D3/S)							
	Group A		Group B		Group C		Group D	
	Cat. 1, 2, 3	Cat. 4	Cat. 1, 2, 3	Cat. 4	Cat. 1, 2, 3	Cat. 4	Cat. 1, 2, 3	Cat. 4
Group of packages (closed packages) to boundary/fixed ignition source	3	5	7.5	15	1.5	3	5	7.5
Group of packages (opened packages - decanting, mixing, dispensing operations) to boundary/fixed ignition source	5	7.5	15	20	3	5	7.5	15

Notes: D3 is not explicitly defined.

Source: SS 532:2007, Table 6.

Part 2 - Separation Distances for Groups to Protected Place (D1)/ On-Site Facility (D2)

	Maximum Capacity (m ³) (kilo-liter) - Category 1 and 2	Maximum Capacity (m ³) (kilo-liter) - Category 3	Maximum Capacity (m ³) (kilo-liter) - Category 4	Minimum Separation Distance (D1/D2) (m)
Group A	0.1	0.5	2.5	Unrestricted
	1	4	10	3
	2	8	20	4
Group B	4	15	40	5
	(6)	20	70	6
	(8)	30	100	7
Group C	(10)	40	140	8
	(15)	60	200	9
	(20)	80	260	10
	(30)	100	340	11
	(40)	120	420	12
	(50)	150	520	13

	Maximum Capacity (m ³) (kilo-liter) - Category 1 and 2	Maximum Capacity (m ³) (kilo-liter) - Category 3	Maximum Capacity (m ³) (kilo-liter) - Category 4	Minimum Separation Distance (D1/D2) (m)
Group D	(60)	180	640	14
	(70)	200	770	15
	(100)	250	(1000)	20
	(120)	300	(1500)	25

Notes: D1 refers to the distance between any protected area and the top of the inside of the bund wall.

D2 is not explicitly defined.

The distances for any intermediate capacity may be obtained by linear interpolation.

Separation distances may be reduced by the use of firewalls and vapor barriers.

The stacking height per pile is generally limited to 3.6 m for Categories 1, 2 and 3, and 6.8 m for Category 4 flammable liquids.

Source: SS 532:2007, Table 5.

Table 16-2

Quantities of Petroleum and Flammable Materials Exempt from Storage License Requirement

Mixed storage of different types of petroleum and flammable materials, or more than one type of flammable materials, in separate containers or compartments	
Type	Threshold
All substances are solids	Aggregate weight does not exceed 20 kilograms
All substances are liquids	Aggregate volume does not exceed 40 liters
All substances are gases	Aggregate weight does not exceed 10 kilograms
Substances in mixed states	Aggregate weight does not exceed 20 kilograms
Storage of mixtures	
Type	Threshold
Mixture containing petroleum and/or flammable materials	Flashpoint does not exceed 61 degrees Celsius
Storage of petroleum products for use in a factory	
Type	Threshold
Class 0	Quantity does not exceed 200 kilograms
Class 1 (kept in air-tight containers)	Quantity does not exceed 400 liters
Class 2 (kept in air-tight containers)	Quantity does not exceed 1,000 liters
Class 3 (kept in air-tight containers)	Quantity does not exceed 1,500 liters
Storage of diesel at a construction worksite	
Type	Threshold
Diesel (exemption applies only if no other petroleum products or flammable materials are stored at the site)	Quantity does not exceed 1,500 liters
Storage of flammable materials	
See the Second Schedule to the <i>Fire Safety (Petroleum and Flammable Materials) Exemption Order 2005</i> for a complete list of the exemptions pertaining to the 237 classes of flammable materials. A link to a periodically updated version of the list is available at: http://www.ntu.edu.sg/fpm/usefulinfo/sys/firesafety/Pages/firelicence.aspx , last accessed September 2010.	

Source: Fire Safety (Petroleum and Flammable Materials) Exemption Order 2005.

Table 16-3**Exempt Irradiating Apparatus**

Part I - Ultraviolet sunlamps, microwave ovens and many other industrial ultrasound apparatus with power output of not more than 50W, and any apparatus with any or combination of the above as part of the apparatus.

Part II - Industrial ultrasound apparatus with power output of 50W or more, and magnetic resonance imaging apparatus.

Part III - Class 3b and Class 4 lasers.

Notes: (from Dr. Phua Tan Tee, "Short Notes on Laser Radiation," Health Sciences Authority of Singapore, 2003.)

Lasers are classified according to *EN 60825-1: 1994 - Safety of laser products Part 1*, as last amended by Amendment A1, July 2002. Below is a summary of classification according to *EN 60825-1*. Note that *EN 60825* has been updated but the latest version is not specified in the Singapore legislation.

Class 3B Lasers - are medium-power and moderate-risk laser devices capable of emitting UV, visible or infrared laser radiation with specified maximum accessible emission levels. It can be in continuous wave or pulsed mode and operating in a power of 500 mW or less for emission duration of longer than 0.25 sec, or a radiant exposure of 100 kJ/m² or less for emission duration shorter than 0.25 sec. These lasers are capable of causing accidental injuries by exposure from the direct or specularly reflected beam. Diffuse laser beam reflection from class 3b are not hazardous, but may be so if focused to eyes with optical instruments. Therapeutic, acupuncture, biosimulation lasers, military laser range finders and designator are all under class 3b lasers.

Class 4 Lasers - are high-power and high-risk lasers that are capable of emitting ultraviolet, infrared or visible laser radiation at levels exceeding the accessible emission levels for class 3b. They average a power output of 500 mW or greater for periods longer than 0.25 sec, or a radiant exposure of 100 kJ/m² within an exposure duration of 0.25 sec or less. These lasers can produce a hazardous direct or specularly reflected laser beam. The potential for fire and skin burn hazards exist as a result of hazardous diffuse reflections.

Source: Radiation Protection (Non-Ionising Radiation) Regulations, First Schedule.

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is provided for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter format does not contain the electronic links and other functionality contained in the MS Word version. The following instructions pertain to the fully linked Word version of the AQC.

Each question from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, electronic links back to the original protocol document are provided for quick access to this information when needed. To return to where you were in the AQC after following a link, use the back arrow located on the Audit Quick Check Toolbar.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X’s to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

Additional audit questions can be added to the end of the AQC. Examples might include corporate requirements or best management practices. To add more questions, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Continue to sequentially number the questions by putting your cursor in the first column and typing the desired number.

Please Note: Additional rows will be included in the sort function. It is important that you number the questions for the sort functions to work. Please consider the following sort rules when entering custom text.

Sorting Responses

The AQC sort feature is accessed from the IAPC menu item located on the far right on the Main MS Toolbar. Please note the following criteria to take full advantage of this feature.

You can change the column titles as you see fit, but the menus assume that:

- the first column contains the question number and question text;
- the second column is "Not Applicable" (N/A) entries;
- the third column is "Complies" entries; and
- the fourth column is "Does Not Comply" entries.

A question is considered "Complies" if there is any text ("X" or "YES", for instance) in the "Complies" column.

A question is considered "Incomplete" if columns 2 to 4 are all empty.

Only one column should contain a value for any given question.

Click the IAPC menu item and then select one of the following menu choices:

Sort by Question Number

- Sorts the section by question number

Sort with Incomplete first

- Sorts the section with Incomplete first, Does Not Comply next, Complies next, then N/A

Sort with Non-compliant first

- Sorts the section with Does Not Comply first, Complies next, N/A next, then Incomplete

Sort with Compliant first

- Sort the section with Complies items first, Does Not Comply next, N/A next, then Incomplete

Sort with Not Applicable last

- Sort the section with not-applicable items last (Complies first, Does Not Comply next, Incomplete next, then N/A)

For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click the IAPC menu item and choose "Sort with Non-compliant first". Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

Once the completed AQC is sorted, save or print a copy of the results. The AQC can then be re-sorted using a different option.

SECTION 16.0 CHEMICAL MANAGEMENT

AUDIT QUICK CHECK

SITE: _____ DATE: _____
 ASSESSOR: _____

	Not Applicable	Complies	Does Not Comply
Q16.1 If the facility uses or stores hazardous substances on-site in quantities greater than the exempt amount listed in Appendix 14-B in Section 14.0 of this protocol, has it received a permit from the Director authorizing such storage? [<i>Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 17(1)</i>] See protocol for notes. I. Hazardous Substances - Licenses and Permits Comments:			
Q16.2 Is the use and storage of hazardous substances conducted in accordance with the conditions specified in the facility's permit? [<i>Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 17(5)</i>] I. Hazardous Substances - Licenses and Permits Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.3 If the facility is authorized to store hazardous substances, does it ensure that each employee and person authorized to handle hazardous substances on site has received instruction and training to enable them to understand the nature of the dangers of all hazardous substances being stored and the emergency action plan to be implemented in the event of any accident or emergency involving any hazardous substance stored? [<i>Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 20</i>] I. Hazardous Substances - Licenses and Permits Comments:			
Q16.4 If the facility sells or offers for sale, imports or exports a hazardous substance as listed in Appendix 5-B in Section 5.0 of this protocol, does it have a license to do so? [<i>Environmental Protection and Management Act, Section 22</i>] See protocol for notes. I. Hazardous Substances - Licenses and Permits Comments:			
Q16.5 Does the facility ensure that the importation, sale, or possession of a licensed hazardous substance is conducted in accordance with the specified conditions of the license? [<i>Environmental Protection and Management Act, Section 23(1a)</i>] I. Hazardous Substances - Licenses and Permits Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.6 Does the facility ensure that any sale of a licensed hazardous substance is conducted by or under the personal supervision of the person named in the license? [<i>Environmental Protection and Management Act, Section 23(1b)</i>] I. Hazardous Substances - Licenses and Permits Comments:			
Q16.7 Does the facility ensure that any agent or employee of the facility involved in storing, using or otherwise dealing with any licensed hazardous substance takes care to deal with the hazardous substance in a manner so as not to threaten the health or safety of any person, or to cause pollution of the environment? [<i>Environmental Protection and Management Act, Section 24(1)</i>] See protocol for notes. I. Hazardous Substances - Licenses and Permits Comments:			
Q16.8 Does the facility ensure that no hazardous substances are sold or supplied to any person who is not authorized to store hazardous substances (except for export of hazardous substances from Singapore)? [<i>Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 21(1-2)</i>] I. Hazardous Substances - Licenses and Permits Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.9 If the facility has a license or permit to store or use hazardous substances, does the facility keep records of all arrivals, sales and supplies of hazardous substances, as well as any inventory records required? [<i>Environmental Protection and Management (Hazardous Substances) Regulations, Regulations 18(a) and 21(3)</i>] See protocol for notes. I. Hazardous Substances - Licenses and Permits Comments:			
Q16.10 If the facility is authorized to store a hazardous substance, does it ensure that the substance is stored only for the purpose(s) stated in the permit? [<i>Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 18(b)</i>] and [<i>Environmental Protection and Management Act, Section 23(2)</i>] I. Hazardous Substances - Licenses and Permits Comments:			
Q16.11 Does the facility ensure that hazardous substances are only stored in containers in an area to which only authorized personnel have access? [<i>Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 19(b)</i>] and [<i>Environmental Protection and Management Act, Section 23(2)</i>] II. Hazardous Substances - Labeling and Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.12 Are storage areas for hazardous substances equipped with containment as well as disposal facilities to deal with any accidental release of hazardous substances? [<i>Code of Practice on Pollution Control, Section 5(a)(ii)</i>] II. Hazardous Substances - Labeling and Storage Comments:			
Q16.13 Are all containers that are used for the storage of hazardous substances constructed and inspected in accordance with internationally acceptable standards and affixed with labels approved by the Director? [<i>Code of Practice on Pollution Control, Section 5(a)(i)</i>] and [<i>Environmental Protection and Management (Hazardous Substances) Regulations, Regulations 15 and 19(a) and (c)</i>] See protocol for notes. II. Hazardous Substances - Labeling and Storage Comments:			
Q16.14 If the facility uses the Safety Audit Scheme, does it conduct a safety audit every two years under the <i>Safety Audit Scheme on Management of Hazardous Substances</i>? [<i>Safety Audit Scheme on Management of Hazardous Substances, Section 3</i>] III. Hazardous Substance Control - General Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.15 If the facility decides to use an in-house audit team, does it ensure that the following criteria are met: [<i>Safety Audit Scheme on Management of Hazardous Substances, Section 5</i>] – The facility has received approval from the PCD prior to the audit to use an in-house audit team; – The team leader does not feel inhibited from disclosing strengths and weaknesses in the management of hazardous substances and in recommending necessary actions; – The team and team leader's skill and experience are appropriate; and – Top management submits a letter to the PCD stating that it has confidence in the skills and experience of the team and team leader and that it will act on their recommendations (where practicable)? III. Hazardous Substance Control - General Comments:			
Q16.16 If the facility's in-house safety audit team conducts audits under the <i>Safety Audit Scheme for Hazardous Substances</i>, are the required training elements of the facility's program met, including the following: [<i>Safety Audit Scheme on Management of Hazardous Substances, Section 6 and Annexes 1 through 4</i>] – Staff is informed of and adequately trained to safely manage any changes; – Effective training is provided to staff responsible for the handling and storage of hazardous chemicals that adequately covers the safety information and safe work practices involved; – The facility's training program ensures that staff are kept up to date on changes to the types and work procedures in the handling of the hazardous chemicals; and			

	Not Applicable	Complies	Does Not Comply
– Contractors that are engaged to handle hazardous chemicals, including transportation, are carefully selected, informed of their safety responsibilities and adequately trained to handle hazardous chemicals safely and to respond to emergencies? III. Hazardous Substance Control - General Comments:			
Q16.17 Was a follow-up action plan specifying a date for compliance included in the Safety Audit Report? [<i>Safety Audit Scheme on Management of Hazardous Substances, Section 6</i>] See protocol for notes. III. Hazardous Substance Control - General Comments:			
Q16.18 Does the in-house safety audit team check all the required elements of the facility's program? [<i>Safety Audit Scheme on Management of Hazardous Substances, Section 7</i>] III. Hazardous Substance Control - General Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.19 If the facility has been required by the Director to conduct any pollution/hazard/risk impact study, has the facility prepared a report that covers the requirements outlined in the <i>Guidelines for Quantitative Risk Assessment (QRA) Study (for Installations which Store, Transport or Use Hazardous Substances)</i>? [<i>Guidelines for Quantitative Risk Assessment (QRA) Study (for Installations which Store, Transport or Use Hazardous Substances)</i>, <i>QRA Report Requirements</i>] See protocol for notes. III. Hazardous Substance Control - General Comments:			
Q16.20 Has the facility submitted the QRA report to each of the following agencies for their information and comments: [<i>Guidelines for Quantitative Risk Assessment (QRA) Study (for Installations which Store, Transport or Use Hazardous Substances)</i>, <i>QRA Submission</i>] – National Environment Agency, Planning and Development Department; – National Environment Agency, Pollution Control Department; – Singapore Civil Defence Force, Fire Safety and Shelter Department; – Singapore Civil Defence Force, HazMat Branch; – Jurong Town Corporation, Land Resource Planning Department; – Ministry of Manpower, Occupational Safety and Health Division; and – Singapore Police Force, Security and Counter Terrorism Division? See protocol for notes. III. Hazardous Substance Control - General Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.21 Following clearance of the QRA, has the facility developed an emergency response plan to mitigate all accident scenarios identified in the QRA study, and has the facility submitted the emergency response plan to the PCD for information and to the Singapore Civil Defence Force (HazMat Branch) for approval? [<i>Guidelines for Quantitative Risk Assessment (QRA) Study (for Installations which Store, Transport or Use Hazardous Substances), Other Requirements (i)</i>] See protocol for notes. III. Hazardous Substance Control - General Comments:			
Q16.22 If the facility has received a written notice from the Director requiring it to remove a hazardous substance to a disposal facility, has the facility achieved compliance with all conditions set forth in the notice? [<i>Environmental Protection and Management Act, Section 25</i>] III. Hazardous Substance Control - General Comments:			
Q16.23 If the facility carries out any activities involving the storage, handling or use of hazardous substances, and it has received a written notice from the Director requiring it to conduct any of the following activities, has it achieved compliance with all conditions set forth in the notice: [<i>Environmental Protection and Management Act, Section 26(1)</i>] – Identification of all possible potential hazards; – Estimation of the frequency or probability of occurrence of the potential hazards identified; – Quantification of the consequences and risk levels of such potential hazards; – Evaluation of the effects of potential fires or other disasters including the potential for release of toxic materials or toxic combustion products and the potential for release of contaminated fire-fighting water into the environment; and			

		Not Applicable	Complies	Does Not Comply
	– Identification of all necessary preventive measures to avoid and control the hazards identified, and formulation of a program to implement these measures? See protocol for notes. III. Hazardous Substance Control - General Comments:			
Q16.24	Has the facility established, documented and implemented an occupational safety and health (OSH) management system that includes a policy that it authorized and signed by the facility's most senior person? [SS 506-3:2006, Section 4.1] IV. Hazardous Substance Control - Chemical Industry Comments:			
Q16.25	Does the policy in Question 16.24 meet the following requirements: [SS 506-3:2006, Section 4.2] <RECORD KEEPING> – Is appropriate for the nature and scale of the facility's OSH risks; – Includes a commitment to continually improve OSH and to affirm the importance of OSH and the well being of personnel in the workplace; – Includes a commitment to comply with legal requirements and other requirements to which the facility subscribes; – Is documented, implemented and maintained; – Is communicated to all persons working for or on the behalf of the facility with the intention that they are made aware of their individual responsibility in the prevention of incidents; – Is available to interested parties; and – Is reviewed periodically to verify its relevance to the facility? IV. Hazardous Substance Control - Chemical Industry Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.26 Has the facility documented and does it maintain an updated compilation of process safety information for workplace/process hazard analysis, risk assessments, and the development of training programs and operating procedures, etc., available to the relevant facility personnel, including the following types of information: [SS 506-3:2006, Section 4.3.1.1] <RECORD KEEPING> – On the hazards of chemicals used or produced by the process (e.g., information included in MSDS); – On the technology of the process (e.g., flow diagram, chemical process and inventory, operational limits and consequences of deviations); and – On the equipment used in the process (e.g., re: safety, materials, piping diagrams, hazardous areas, relief and ventilation systems, and design codes and standards)? IV. Hazardous Substance Control - Chemical Industry Comments:			
Q16.27 Has the facility established and implemented, and does it maintain, updated and available procedures for the following: [SS 506-3:2006, Section 4.3.1.2] <RECORD KEEPING> – Ongoing identification of physical, chemical and biological hazards; – Assessment of risks; and – Implementation of necessary control measures? See protocol for notes. IV. Hazardous Substance Control - Chemical Industry Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.28 Does the facility's OSH management system achieve the following: [SS 506-3:2006, Section 4.3.2- 4.3.4] – Identify, access, evaluate and communicate to relevant personnel applicable legal and other OSH requirements; and – Establish and maintain documented OSH objectives and targets by the implementation of an OSH management program? See protocol for notes. IV. Hazardous Substance Control - Chemical Industry Comments:				
Q16.29 Does the facility ensure that any person performing a task on its behalf has demonstrated basic competencies in OSH and has sufficient knowledge (both generic and process-specific) to: [SS 506-3:2006, Section 4.4.2] – Recognize potential hazards; – Know their legal responsibilities; and – Know their role to ensure a safe work environment? See protocol for notes. IV. Hazardous Substance Control - Chemical Industry Comments:				

	Not Applicable	Complies	Does Not Comply
Q16.30 Has the facility established and implemented procedures for the proper use, storage, handling, movement and disposal of hazardous substances, including the following: [SS 506-3:2006, Section 4.4.6.7(a)] – The use of process safety information in Question 16.26 to maintain a register of the facility's hazardous substances; and <RECORD KEEPING> – The accompaniment of each hazardous substance with a Safety Data Sheet (SDS) to facilitate risk assessment and training on the proper handling and safety precautions to be used during handling, storage and disposal? IV. Hazardous Substance Control - Chemical Industry Comments:			
Q16.31 Has the facility established and implemented procedures for the proper receipt, storage, issue, distribution, handling, safe use movement and disposal of hazardous substances, including the following: [SS 506-3:2006, Section 4.4.6.7(b)] – Their storage in suitable and secure designated areas; – The storage of incompatible substances in different areas or areas that are separated by a physical barrier; – The provision of hazard labels on the external shells of storage tanks, vessels and containers; – The posting of warning signage at entrances to storage and other appropriate areas; – The provision of hazard communication training to all employees and contractors who may be exposed to the hazardous substances, including training on the hazards involved, safe handling procedures, PPE, and emergency response; and – The disposal of hazardous substances in accordance with regulatory requirements and manufacturer's recommendations? IV. Hazardous Substance Control - Chemical Industry Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.32 Has the facility established and implemented procedures for obtaining approval prior to the procurement, acquisition or purchase of hazardous substances to ensure that their chemical, physical and toxicological properties have been reviewed by management? [SS 506-3:2006, Section 4.4.6.7(c)] IV. Hazardous Substance Control - Chemical Industry Comments:				
Q16.33 Has the facility established and implemented procedures for the inventory management of hazardous substances to ensure that stored quantities are not in excess of the capacities required for production or by regulatory requirements? [SS 506-3:2006, Section 4.4.6.7(d)] IV. Hazardous Substance Control - Chemical Industry Comments:				
Q16.34 Has the facility developed an emergency response plan and procedures for each level of the organization that identifies potential incidents, accidents and emergency situations and their impacts, and will prevent or mitigate any resulting illness or injury? [SS 506-3:2006, Section 4.4.8] IV. Hazardous Substance Control - Chemical Industry Comments:				

	Not Applicable	Complies	Does Not Comply
Q16.35 Does the facility's emergency response plan include the following elements: [SS 506-3:2006, Section 4.4.8] – Establishment of a designated emergency control center with the following facilities: – Workplace and process layout maps or drawings; – Fire-fighting system and utilities drawings; and – Emergency communications, lighting and emergency response equipment; – Emergency team and their duties and responsibilities; – Appointment of a person in charge to implement the emergency response plan; – Notifications and initiating alarms; – Initial response (fire-fighting, first-aid, containment); – Evacuation and rescue, first aid and medical facilities; and – Nearest government response agency, including their roles and response time to emergencies? IV. Hazardous Substance Control - Chemical Industry Comments:			
Q16.36 Is the emergency plan periodically reviewed and revised, where necessary, especially after an incident or emergency? [SS 506-3:2006, Section 4.4.8] IV. Hazardous Substance Control - Chemical Industry Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.37 Does the facility have a program for periodically conducting drills and exercises to test procedures, where practicable? [SS 506-3:2006, Section 4.4.8] IV. Hazardous Substance Control - Chemical Industry Comments:				
Q16.38 Is occupational safety and health monitored and measured on a regular basis? [SS 506-3:2006, Section 4.4.8] See protocol for notes. IV. Hazardous Substance Control - Chemical Industry Comments:				
Q16.39 Does the facility conduct monitoring of the work environment and employees who are exposed to chemical agents or physical factors, to ensure exposure is within permissible levels? [SS 506-3:2006, Section 4.4.8] See protocol for notes. IV. Hazardous Substance Control - Chemical Industry Comments:				

	Not Applicable	Complies	Does Not Comply
Q16.40 Does the facility have procedures for the calibration and maintenance of all monitoring equipment, and are records kept of calibration and maintenance activities and results? [SS 506-3:2006, Section 4.4.8] <RECORD KEEPING> See protocol for notes. IV. Hazardous Substance Control - Chemical Industry Comments:			
Q16.41 Does the facility have a program to periodically evaluate compliance with the applicable legal requirements, and are records kept of the results of such periodic evaluations? [SS 506-3:2006, Section 4.5.2.1] <RECORD KEEPING> See protocol for notes. IV. Hazardous Substance Control - Chemical Industry Comments:			
Q16.42 Are comprehensive occupational safety and health inspections conducted at planned intervals according to the facility's inspection program, using a protocol or checklist, to verify compliance with legal requirements, company procedures and safe work practices? [SS 506-3:2006, Section 4.5.2.3] IV. Hazardous Substance Control - Chemical Industry Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.43 Has the facility developed performance standards for occupational safety and health inspections that specify the following: [SS 506-3:2006, Section 4.5.2.3] – Appropriate training for inspectors; – Frequency of inspection; and – Scope and coverage of the inspections? IV. Hazardous Substance Control - Chemical Industry Comments:				
Q16.44 Is the occupational safety and health inspection system evaluated to ensure standards are met? [SS 506-3:2006, Section 4.5.2.3] IV. Hazardous Substance Control - Chemical Industry Comments:				
Q16.45 Does the facility have procedures to ensure that incidents and nonconformances that might result in injury, illness or the release of hazardous substances are investigated? [SS 506-3:2006, Section 4.5.3] IV. Hazardous Substance Control - Chemical Industry Comments:				

	Not Applicable	Complies	Does Not Comply
Q16.46 Does the facility's incident and corrective action program include the following: [SS 506-3:2006, Section 4.5.3] – Reporting, recording and investigation of incidents, accidents and nonconformities resulting in unsafe conditions or hazards; – Actions to mitigate consequences of incidents, accidents or nonconformities; – Determination of root causes; – Evaluation of the need to revise risk assessments; – Evaluation of the need for preventive actions; – Initiation and completion of corrective and preventive actions; and – Confirmation of the effectiveness of actions taken? See protocol for notes. IV. Hazardous Substance Control - Chemical Industry Comments:			
Q16.47 Are changes to documented procedures in the OSH management system resulting from corrective or preventive actions recorded, and are lessons learned communicated to all relevant facility personnel? [SS 506-3:2006, Section 4.5.3] <RECORD KEEPING> See protocol for notes. IV. Hazardous Substance Control - Chemical Industry Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.48 Does the facility maintain the appropriate records necessary to demonstrate conformance with the requirements of the facility's OSH management system and of <i>SS 506-3:2006</i>, and are such records legible, identifiable and traceable? [<i>SS 506-3:2006, Section 4.5.4</i>] <RECORD KEEPING> See protocol for notes. IV. Hazardous Substance Control - Chemical Industry Comments:			
Q16.49 Are internal audits of the OSH management system conducted at planned intervals to evaluate the following: [<i>SS 506-3:2006, Section 4.5.5</i>] – Conformity of the safety and health management with the requirements of <i>SS 506-3:2006</i>; – Implementation and ongoing maintenance of the OSH management system; – Effectiveness of the OSH management system at meeting the facility's policy, objectives and targets; and – Compliance with applicable legal and other requirements? See protocol for notes. IV. Hazardous Substance Control - Chemical Industry Comments:			
Q16.50 Does the facility ensure that the results of previous audits of the OSH management system are reviewed periodically and that facility audit results are provided to management? [<i>SS 506-3:2006, Section 4.5.5</i>] IV. Hazardous Substance Control - Chemical Industry Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.51 Does the facility's top management review the OSH management system at planned intervals, including assessing opportunities for improvement and evaluating required changes to the management system? [SS 506-3:2006, Section 4.6] IV. Hazardous Substance Control - Chemical Industry Comments:				
Q16.52 Are records kept of the management review process of the facility's OSH management system? [SS 506-3:2006, Section 4.6] <RECORD KEEPING> IV. Hazardous Substance Control - Chemical Industry Comments:				
Q16.53 Has the facility established a written hazard communication program or procedure that includes the following: [Guidelines on the Implementation of Safety Management System for the Metalworking Industry, Section 12.2.1 (a-d)] <RECORD KEEPING> – Maintenance of a register of hazardous substances in use in the facility with information on their location; – Availability of Material Safety Data Sheets (MSDS) for each hazardous substance; – A documented system for obtaining new and revised MSDS; – Procedures for proper receipt, storage, issue, distribution, transportation, handling and safe use of the hazardous substances, including: – The identification of incompatible materials and potentially hazardous combinations and conditions that require special safety measures; and – The identification of high-risk processes and special procedures; and – The appointment of technically competent persons to administer the control, procurement and storage of the hazardous substances? V. Hazardous Substance Control – Metalworking Industry				

	Not Applicable	Complies	Does Not Comply
Comments:			
Q16.54 Are all containers used to store hazardous substances labeled, tagged or marked with the following information: <i>[Guidelines on the Implementation of Safety Management System for the Metalworking Industry, Section 12.2.1(e)]</i> – Identification of the hazardous chemical(s); – Name used on material safety data sheet and in chemical list; and – Hazard warning and control? V. Hazardous Substance Control – Metalworking Industry Comments:			
Q16.55 Does the facility provide designated storage areas for hazardous substances that meet the following conditions: <i>[Guidelines on the Implementation of Safety Management System for the Metalworking Industry, Section 12.2.2]</i> – For small quantities stored in chemical storage cabinets, the cabinets are segregated by distance and/or physical barriers from other incompatible substances; – For drummed or bulk chemicals (including fuels and oils) the storage area is provided with secondary containment; and – All storage areas are inspected on a routine basis to ensure integrity of the chemical containers and secondary containment systems? V. Hazardous Substance Control – Metalworking Industry Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.56 Is hazard communication training organized for all employees who may be exposed to hazardous substances? [<i>Guidelines on the Implementation of Safety Management System for the Metalworking Industry, Section 12.2.3</i>] V. Hazardous Substance Control – Metalworking Industry Comments:				
Q16.57 Is special training conducted for persons performing non-routine tasks involving hazardous chemicals that includes the following: [<i>Guidelines on the Implementation of Safety Management System for the Metalworking Industry, Section 12.2.3</i>] – Review of the hazards of the chemicals; – Special work procedures; – Handling rules and precautions; – PPE; and – Spill prevention and containment procedures? V. Hazardous Substance Control – Metalworking Industry Comments:				
Q16.58 Are records maintained of training involving the use and handling of hazardous substances? [<i>Guidelines on the Implementation of Safety Management System for the Metalworking Industry, Section 12.2.3</i>] <RECORD KEEPING> V. Hazardous Substance Control – Metalworking Industry Comments:				

	Not Applicable	Complies	Does Not Comply
Q16.59 If the facility is authorized to store hazardous substances on site through a license or permit, has it established and kept up to date an adequate emergency action plan that outlines actions to be taken in the event of an accidental spillage, leakage, release, accident or emergency which may arise from the transport or storage of hazardous substances? [<i>Environmental Protection and Management (Hazardous Substances) Regulations, Regulations 17(2) and 22(1)</i>] <RECORD KEEPING> VI. Hazardous Substances - Emergency Response and Contingency Planning Comments:			
Q16.60 Does the facility ensure that the emergency action plan as described in Question 16.59 contains the following elements: [<i>Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 22(3)</i>] – Identification of likely accident scenarios and establishment of the likely impact zones; – Notification and activation procedures; – Response actions to contain and control the release and to mitigate the impact of the release; – Monitoring of the affected areas, including the off-site affected areas; – Procedures for decontamination and clean-up of affected areas; – Names of personnel with their assigned roles and responsibilities in dealing with the emergency; and – A list of emergency response equipment, including protective gear, fire-fighting equipment, oversized drums, emergency containers/tankers, absorbents, neutralizing agents, monitoring equipment, clean-up equipment, etc., made available for dealing with the emergency? See protocol for notes. VI. Hazardous Substances - Emergency Response and Contingency Planning Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.61 Has the emergency action plan been approved by the Director? <i>[Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 22(2)]</i> VI. Hazardous Substances - Emergency Response and Contingency Planning Comments:			
Q16.62 Does the facility ensure that there are trained personnel and equipment in readiness at all times to deal adequately with any spillage, leakage, release, accident or emergency which may arise in accordance with the established emergency action plan? <i>[Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 22(5)]</i> VI. Hazardous Substances - Emergency Response and Contingency Planning Comments:			
Q16.63 If the facility experienced an accidental release of a hazardous substance, did it ensure that the following requirements were met: <i>[Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 23 (1 through 3)]</i> – Immediate actions and mitigating measures were taken in accordance with the established emergency action plan to control and contain the release; – The facility manager or person authorized to store the hazardous substance was immediately notified; – The Director and the Singapore Civil Defence Force were immediately notified; – The affected area was decontaminated, cleaned-up and restored back to normal; and See protocol for notes.			

	Not Applicable	Complies	Does Not Comply
- As soon as practicable, the Director was furnished with a detailed report in writing that included the following: - The circumstances of the accidental release of the hazardous substance(s); - The immediate actions and mitigating measures taken by the facility to control and contain the release and the measures taken to restore the affected areas to normal; and The measures taken to prevent recurrence of a similar spill, leak, release, accident or emergency? VI. Hazardous Substances - Emergency Response and Contingency Planning Comments:			
Q16.64 If the facility discovered a loss or theft of any hazardous substance, did it make the following notifications: [<i>Environmental Protection and Management (Hazardous Substances) Regulations, Regulation 24</i>] - Immediately notified the police and the Director; and - As soon as practicable, provided a detailed report in writing to the Director on the circumstances leading to the loss or theft and the measures taken to prevent recurrence of the loss or theft? VI. Hazardous Substances - Emergency Response and Contingency Planning Comments:			
Q16.65 If an actual or probable discharge of oil, an oily mixture, noxious liquid substance, or a mixture containing such substances occurred at the facility and discharged into Singapore waters from any place on land, did the facility perform each of the following: [<i>Prevention of Pollution of the Sea Act, Sections 3 and 4</i>] and [<i>Prevention of Pollution of the Sea (Reporting of Pollution Incidents) Regulations, Regulations 7 through 10</i>] - Stopped the discharge as soon as practical after discovering it; - Reported the incident to the Port Master as soon as possible;			

	Not Applicable	Complies	Does Not Comply
– Ensured that the report to the Port Master included information regarding the time, type, and location of the incident, the quantity and type of substance involved, the assistance requested or sought, and/or the measures taken to mitigate the situation; and – Provided a supplementary report updating the information contained in the initial report, providing information concerning further developments and complying with any request for additional information made by the Port Master? See protocol for notes. VI. Hazardous Substances - Emergency Response and Contingency Planning Comments:			
Q16.66 Wherever possible, has the facility substituted harmless or less harmful substances, processes, or techniques for harmful substances, processes or techniques? [CP 27:1999, Section 2.5.1] VII. Toxic Substances Comments:			
Q16.67 Are all toxic substances such as cyanides, arsenic and cadmium, concentrated acids and alkalis, kept in a separate well-ventilated room under lock and key? [CP 27:1999, Section 2.5.3] VII. Toxic Substances Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.68	Are cyanides kept separately from all acids? [CP 27:1999, Section 2.5.3] VII. Toxic Substances Comments:			
Q16.69	Are warning notices posted where toxic substances are used or stored that conform to the following requirements: [CP 27:1999, Section 2.5.4] – In languages understood by persons employed in the factory; – Specifying the hazard of toxic substances; and – Placed at appropriate locations and at all entrances to workrooms where toxic substances are stored or used? VII. Toxic Substances Comments:			
Q16.70	Does every pipe, pump, compressor and other equipment in the factory that is used to convey steam, air, refrigerant or any hazardous substance, and each part and fitting of those, meet the following requirements: [Workplace Safety and Health (General Provisions) Regulations 2006, Regulation 34] – Is of good construction, sound material and adequate strength; – Is free from patent defects; and – Is properly maintained? VIII. Hazardous Substances - Piping and Equipment Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.71 If the facility has minor storage of flammable liquids, does it observe the following precautions for those minor storage areas: [SS 532:2007, Section 4.2] – The storage is not in proximity to a heat or ignition source; – Any materials that might interact dangerously if mixed are kept apart; – Flammable liquids are not used or stored where they might prevent workers from escaping from the building; – Concentrated storage of flammable liquids in any one area is avoided; – Transportation of the flammable liquid from storage to the point of use is done in a manner that minimizes the possibility of spills or fire; – Spills are cleaned up immediately and the clean-up materials are disposed of safely in accordance with any relevant local regulations and not into the public sewer system; and – Persons who handle flammable liquids are aware of the hazards involved? IX. Flammable and Combustible Liquids - General Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.72 If the facility stores flammable liquids in a minor storage area, are the containers managed as follows: [SS 532:2007, Section 4.1 and Table 2] – Containers have airtight lids and are compatible with the material being stored; – The maximum capacity of any one container does not exceed the following: – Category 1 and 2 flammable liquids - 5 liters; – Category 3 flammable liquids - 10 liters; and – Category 4 flammable liquids - 25 L; – Containers are kept closed when not in use; – Packages are opened or liquids are decanted in a well-ventilated area away from any potential ignition source; and – Containers are not pressurized unless they are designed for that purpose? IX. Flammable and Combustible Liquids - General Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.73 If the facility has minor storage for flammable liquids, are the following minimum separation distances observed: [SS 532:2007, Section 4.3] – Between two indoor minor storage areas: – 10 meters for a non-sprinkler protected area; and – 7.5 meters for a sprinkler protected area; – Between an indoor minor storage area and a safety cabinet: – 5 meters for a non-sprinkler protected area; and – 3 meters for a sprinkler protected area; – Between an outdoor minor storage area and the facility boundary, an on-site facility, or a protected place, 1.5 meters; – Between two outdoor minor storage areas, 7.5 meters; and – Between an indoor and outdoor minor storage area, 5 meters? See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.74 Are all the facilities on site that handle flammable liquids designed and constructed to be safe and suitable for the conditions of use, including attention to the following: [SS 532:2007, Section 5.2.1] – Avoidance of ignition sources; – Separation of potential hazards; and – Avoidance of flammable concentrations by the enclosure of the vapor source, or by ventilation to dilute concentrations to a safe level? See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.75 In areas where a flammable liquid is being transferred or used in a manner that releases vapors, does the facility ensure that the ventilation, extraction, or dispersal provisions are sufficient to maintain exposure levels below the applicable exposure standards set out in the national workplace regulations? [SS 532:2007, Section 5.2.3] See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.76 Does the facility ensure that any alterations, extension or repairs (including removals) to any installation do not contravene the requirements of SS 532:2007, and do not render the installation hazardous or otherwise unacceptable to the authority? [SS 532:2007, Section 5.2.5] See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.77 Has all electrical wiring and equipment located in each hazardous or potentially hazardous zone, as defined in <i>NFPA 70 - National Electrical Code</i> or <i>SS 254 - Electrical Apparatus for Explosive Gas Atmospheres</i>, been listed and marked for installation in the appropriate hazardous zone? [SS 532:2007, Section 5.2.6] IX. Flammable and Combustible Liquids - General Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.78 Does the facility ensure that artificial lighting is provided at a level appropriate to the activity, if natural lighting is inadequate? [SS 532:2007, Section 5.2.7] See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.79 Is every package store larger than a minor storage restricted to the storage of flammable liquids unless the following conditions are met: [SS 532:2007, Sections 5.2.8 and 6.2.1] – Specific approval is given for the storage of other products; – Such other products will not react dangerously or be incompatible with the flammable liquids; and – The filling, decanting, cleaning and painting of packages is subject to any additional specific requirements? IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.80 Does the facility ensure that all flammable liquids storage areas are appropriately secured against unauthorized access? [SS 532:2007, Section 5.4.1] IX. Flammable and Combustible Liquids - General Storage Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.81 Does the facility ensure that appropriate precautionary statements are displayed at the entrances to any storage area? [SS 532:2007, Section 5.4.1] See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:				
Q16.82 Does the facility ensure that hazard labels are used for flammable storage containers and areas? [SS 532:2007, Section 5.4.2] See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:				
Q16.83 Does the location of any package storage area, except storage in safety cabinets, meet the following requirements: [SS 532:2007, Section 6.2.2] – It is located on the ground floor or level, with direct access from the fire engine access road; and – The selection of the location considers the following: – Separation from other activities, buildings, public places, or other property or persons; – Separation from possible ignition sources; – Ventilation to ensure dispersal of vapors; – Precautions against toxic hazards; and – Control of spillage and drainage from the area? IX. Flammable and Combustible Liquids - General Storage Comments:				

	Not Applicable	Complies	Does Not Comply
Q16.84 Does every package store meet the following requirements: [SS 532:2007, Section 6.2.3] – The floor within the compound is constructed to minimize the spread of the fire to other piles or racking; – Provisions are made to contain any leakage or spillage from the packages, and to prevent it from contaminating surrounding soil or from entering the public sewer system or any drainage system other than one intended specifically for its drainage and collection; and – Control is by a spill containment compound or the equivalent? See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.85 Is the spill containment compound large enough to hold not less than 100 percent of the largest package plus 25 percent of the storage capacity for storage up to 10,000 liters, plus an additional 10 percent of the storage capacity for storage of more than 10,000 liters? [SS 532:2007, Section 6.2.3] See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.86 Are platforms, such as loading docks, constructed as follows: [SS 532:2007, Section 6.2.4] – Either as a concrete deck on solid fill or on concrete supports; or – As a timber deck on steel, concrete or masonry posts or framework? See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:				
Q16.87 Is adequate natural or mechanical ventilation provided for each package store to prevent the accumulation of vapor within the compound area of the indoor storage? [SS 532:2007, Section 6.2.5] See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:				
Q16.88 Do all vent openings inside a package store conform to the following: [SS 532:2007, Section 6.2.6] – Are provided with a barrier, if necessary, to prevent blockage by stored packages; and – Where the vent passes through wall that incorporates a cavity or is made of bricks or blocks that incorporate cavities, a metal sleeve to prevent leakage of vapor into the cavities is provided? IX. Flammable and Combustible Liquids - General Storage Comments:				

	Not Applicable	Complies	Does Not Comply
Q16.89 Does the facility employ security measures and means for controlling entry to a storage area? [SS 532:2007, Section 6.2.8] IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.90 Does the distance between the most remote points of any package in the storage area to the nearest fire engine access road meet the following requirements: [SS 532:2007, Section 6.2.9] – For external storage area, it does not exceed 60 meters; and – For indoor storage, it does not exceed 45 meters? IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.91 Are warning notices (also called hazard precautionary statements) displayed so that they are clearly readable from any access point? [SS 532:2007, Section 3.18.4 and 6.2.10] See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.92 Does the facility ensure that the following requirements are met for a restricted area for flammable liquids: [SS 532:2007, Section 9.2.1 - 9.2.5] – No ignition sources, matches or lighters are introduced into the area; – Smoking is prohibited, except in specifically approved places, and “No Smoking” signs and “Smoking Permitted” signs are displayed in the appropriate areas; – Procedures are established to control entry to the area and prevent unauthorized access; – Vehicle access and movement within a restricted area is controlled; and – Adequate illumination is provided in the restricted area, and any electric hand lamps are of a type approved for the purpose? See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.93 If the facility engages a contractor to perform work within a restricted area for flammable liquids, are the following requirements met: [SS 532:2007, Section 9.2.6] – The contract includes requirements for adherence to applicable safety regulations; – The contractor is instructed that work is to be carried out only in the designated area; and – Work methods and procedures, as regards matters of safety, are agreed upon by the facility and the contractor? See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.94 In regards to prevention and control of leakage or spillage of flammable liquids, are the following requirements met: [SS 532:2007, Section 9.2.7] – A contingency plan is established; – Actions are taken immediately to clean up a spill or leak according to the contingency plan; and – All spilled or leaked materials are collected for proper disposal? IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.95 If the facility manually transfers a Category 1 or 2 flammable liquid between containers and transports it from storage to the point of use, are the following requirements met: [SS 532:2007, Section 9.2.8] – A self-closing safety faucet is used for dispensing; – A safety container is used for the transport; and – Proper safety precautions against static charge build-up are in place? IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.96 Are flammable liquid storage areas maintained in a safe condition as follows: [SS 532:2007, Section 9.2.10] – The area is kept clear of all extraneous material; – Required clearance distances are maintained at all times; – Packages are not placed in locations that impede worker entry or exit; – Vegetation that may become a fire hazard is kept short; and			

	Not Applicable	Complies	Does Not Comply
– Weed killer that is known to be a potential source of fire or land contamination is not used? IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.97 Does the facility ensure that personnel are not exposed to harmful concentrations of vapors, oxygen-deficient atmospheres, or other environmental hazards unless suitable protective clothing, breathing apparatus, or other protection appropriate to the circumstances is used? [SS 532:2007, Section 9.3.3] See protocol for notes. IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.98 Does the facility ensure that all operational and maintenance work is planned and supervised by responsible staff who will ensure that all safety precautions are observed? [SS 532:2007, Section 9.3.5] IX. Flammable and Combustible Liquids - General Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.99 If the facility uses or stores flammable liquids, is the following training provided: [SS 532:2007, Section 9.3.1] – Personnel, including contractors, are made fully aware of in-house safety rules applicable to their duties; – Personnel are required to attend and pass a relevant safety orientation course(s) conducted by an approved training center; and – Personnel, including contractors, are trained to be fully competent for the operation to which they are assigned? IX. Flammable and Combustible Liquids - General Storage Comments:			
Q16.100 Are indoor package stores, except storage in safety cabinets, located on the ground floor or level directly accessible from street level, site road way or fire engine access road? [SS 532:2007, Section 6.4.2] See protocol for notes. X. Flammable Liquids - Indoor Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.101 If the only means of access to an indoor package store is through an associated working area that is an on-site facility, are the following requirements observed: [SS 532:2007, Section 6.4.2(b)] – The capacity of the indoor package store is limited to 3,000 liters if non-sprinkler protected, or 5,000 if sprinkler protected; – The travel distance between the external opening and the fire door of the indoor package store is not more than 10 meters if non-sprinkler protected, or 15 meters if sprinkler protected; – The indoor package store is a fire compartment; and – The size of the indoor package store is based on the store's fire suppression system, as follows: – For a manual fire alarm system, the compartment has a maximum floor area not exceeding 50 square meters; – For an automatic fire alarm system, the compartment has a maximum floor area not exceeding 200 square meters; – For an automatic fire suppression system, the compartment has a maximum floor area not exceeding 600 square meters; and – For an automatic foam suppression system, the compartment has a maximum floor area not exceeding 900 square meters? X. Flammable Liquids - Indoor Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.102 Is the stacking height of an indoor package store limited to 3.6 meters, unless the building is protected with a fire suppression system designed in accordance with <i>CP 52:2004</i>, in which case the maximum height is 15 meters? [SS 532:2007, Section 6.4.2(c)] See protocol for notes. X. Flammable Liquids - Indoor Storage Comments:			
Q16.103 Is each indoor storage compartment constructed as follows: [SS 532:2007, Section 6.4.3] – The walls are made of masonry or concrete with a 4-hour fire rating; – The floors are of earth, masonry or concrete; – If there is a basement below the ground floor where the store is, the ceiling of the basement is constructed of reinforced concrete with a 4-hour fire rating; – If the roof of the attached package store is lower than the adjacent building, then it is constructed to have a minimum 4-hour fire rating for the two thirds of the roof surface adjacent to the building, but not less than 5 meters measured horizontally from the adjoining wall of the adjacent building; – An occupancy or usage located above the storage compartment is separated by a barrier having a minimum 4-hour fire rating; – The external surface of any wall is masonry or concrete; and – The barrier separating the storage from other occupancies is a 4-hour fire rated wall with an automatic closing 4-hour fire rated door with a fusible link or other actuating mechanism? X. Flammable Liquids - Indoor Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.104 Is every doorway to a compartment an outward-swinging, automatic closing fire door with a minimum fire rating of 2-hours? [SS 532:2007, Section 6.4.4] See protocol for notes. X. Flammable Liquids - Indoor Storage Comments:			
Q16.105 Is each window in a storage compartment of the same fire rating as the wall it occupies? [SS 532:2007, Section 6.4.5] X. Flammable Liquids - Indoor Storage Comments:			
Q16.106 Is each indoor storage compartment provided with a natural or mechanical ventilation system meeting the requirements of Section 6.4.6 of SS 532:2007? [SS 532:2007, Section 6.4.6] See protocol for notes. X. Flammable Liquids - Indoor Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.107 Does the mechanical ventilation system for an indoor package store meet the following requirements: [SS 532:2007, Section 6.4.6.3 (d) and (g) and 9.2.15] – It is provided with an airflow failure warning device; – It is designed to operate either continuously, whenever work is being conducted in the package store, or whenever a person is in the package store; – It is backed up with a secondary power supply; and – Operating procedures are in place to ensure that the system operates as required? X. Flammable Liquids - Indoor Storage Comments:			
Q16.108 If a safety cabinet is used for storage of flammable materials, are the following requirements met: [SS 532:2007, Section 6.5.1 - 6.5.4] – The cabinet is constructed of non-combustible material, and it is approved and listed by a certified testing laboratory, such as Underwriters Laboratory (UL) or Factory Mutual (FM); – Not more than 250 liters aggregate of flammable liquid is stored in any individual cabinet; – Other classes of dangerous goods (as classified in the GHS) are not stored in the same cabinet as flammable liquids; and – Each cabinet is marked with its maximum capacity, an appropriate flammable liquid label of at least 250 millimeters size, and a warning sign that says "NO SMOKING, NO IGNITION SOURCES" in lettering at least 50 millimeters high? X. Flammable Liquids - Indoor Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.109 If a safety cabinet is used for storage of flammable liquids, is the quantity of flammable liquids moved to the cabinet per trip 250 liters or less? [SS 532:2007, Section 6.5.2] X. Flammable Liquids - Indoor Storage Comments:			
Q16.110 Are the following requirements for storage of flammable liquids in safety cabinets met: [SS 532:2007, Section 6.5.5 - 6.5.7] – The maximum capacity of liquid stored does not exceed 2 liters per square meter per storey of the facility; – Safety cabinets are not located in a basement; – For a non-sprinkler protected area, a group of cabinets with a maximum aggregate capacity of 500 liters is separated by a minimum distance of 10 meters from any other group; See protocol for notes. – For a sprinkler protected area, a group of cabinets with a maximum aggregate capacity of 750 liters is separated by a minimum distance of 10 meters from any other group; See protocol for notes. – The safety cabinet is at least 3 meters from any naked flames; and – The location of the safety cabinet does not hamper the escape of persons through exits and stairways? X. Flammable Liquids - Indoor Storage Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.111 If a safety cabinet is used for outdoor storage of flammable liquids, does it meet the requirements given in Question 16.108 through Question 16.110, and is it protected against weather, corrosion and traffic damage? [SS 532:2007, Section 6.3.3(d)] XI. Flammable and Combustible Liquids - External and Outdoor Storage Comments:				
Q16.112 Are all outdoor groups of flammable liquids separated from on-site facilities and protected places by the minimum distance as indicated in Table 5 of SS 532:2007 (see Table 16-1, Part 2)? [SS 532:2007, Sections 6.3.1(a), 6.3.1.2 and Table 5] See protocol for notes. XI. Flammable and Combustible Liquids - External and Outdoor Storage Comments:				
Q16.113 For outdoor package stores, is the minimum separation distance to any boundary or fixed ignition source as specified in Table 6 of SS 532:2007 (see Table 16-1, Part 1)? [SS 532:2007, Section 6.3.1.3 and Table 6] XI. Flammable and Combustible Liquids - External and Outdoor Storage Comments:				

		Not Applicable	Complies	Does Not Comply
Q16.114	Does the facility ensure that the distance between two groups is at least half of the minimum separation distance specified in Table 5 of SS 532:2007 (see Table 16-1, Part 2)? [SS 532:2007, Section 6.3.1.3(b)] XI. Flammable and Combustible Liquids - External and Outdoor Storage Comments:			
Q16.115	Where a fire door connects a storage area with an associated working area, is the separation distance from the fire door to an ignition source not less than those given in Table 6 of SS 532:2007 (see Table 16-1, Part 1)? [SS 532:2007, Section 6.3.1.3(i)] XI. Flammable and Combustible Liquids - External and Outdoor Storage Comments:			
Q16.116	Are all outdoor storage areas graded in a manner to divert possible spills away from buildings or other exposures, or are they surrounded by a curb at least 15 centimeters high? [SS 532:2007, Section 6.3.2.1] XI. Flammable and Combustible Liquids - External and Outdoor Storage Comments:			
Q16.117	If curbs are used in outdoor storage areas to contain or divert spills, are there provisions for draining accumulations of groundwater, rain water or spills of liquids such that the drains terminate at a safe location and are accessible to operation under fire conditions? [SS 532:2007, Section 6.3.2.1] XI. Flammable and Combustible Liquids - External and Outdoor Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.118 Are all outdoor storage areas protected against tampering or trespass where necessary, and kept free of weeds, debris and other combustible materials not necessary to the storage? [SS 532:2007, Section 6.3.2.2] XI. Flammable and Combustible Liquids - External and Outdoor Storage Comments:			
Q16.119 Does the facility ensure that any outdoor package store is constructed as follows: [SS 532:2007, Section 6.3.3] – Walls and roofs, if included, are masonry concrete or a structure sheeted with non-flammable material (except for any necessary skylights) unless a fire-rated structure is required; See protocol for notes. – Floors forming part of the spillage catchment system are impervious, not liable to degradation or frictional sparking, and preferably made of concrete or masonry; and – Platforms, if included, are impervious, not liable to degradation or frictional sparking, and preferably made of concrete or masonry, and the loading face includes a vapor barrier up to the deck height, extending the full length of the face and continuing at least 1 meter along the side at each end? See protocol for notes. XI. Flammable and Combustible Liquids - External and Outdoor Storage Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.120	If an outdoor storage has no wall, other than a bund, on one or more sides, are the packages arranged or stacked so that they are unlikely to fall outside the compound? [SS 532:2007, Section 9.2.9] XI. Flammable and Combustible Liquids - External and Outdoor Storage Comments:			
Q16.121	Is any chemical or oil store provided with leak and spill containment that meet the following conditions: [Code of Practice on Pollution Control, Section 4.1.2(d)] – The area does not have any outlet/opening leading to a storm water drain or sewer; and – All leaks and spillage are collected for proper disposal as toxic industrial wastes? XII. Chemical/Oil Storage Comments:			
Q16.122	Is the floor of any chemical warehouse coated with a layer of chemical-resistant material? [Code of Practice on Pollution Control, Section 4.1.2(f)(iv)] XII. Chemical/Oil Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.123 If the facility stores petroleum or flammable material in quantities equal to or greater than those specified in Table 16-2, has it obtained a license from the Commissioner to do so? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 4</i>] and [<i>Fire Safety (Petroleum and Flammable Materials) Exemption Order 2005</i>] See protocol for notes. XIII. Petroleum and Flammable Materials - Storage Comments:			
Q16.124 If the facility has a license to store petroleum or flammable materials, is the license displayed at all times in a prominent and accessible place at the facility, and is it made available at all times to an inspector, if requested? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulations 11(1) and 12</i>] XIII. Petroleum and Flammable Materials - Storage Comments:			
Q16.125 If the facility has a license to store petroleum or flammable materials and subsequently ceases to store petroleum at the facility, does it inform the Commissioner in writing within 14 days, and does it ensure that all storage systems and installations used in filling, dispensing or storage of petroleum or flammable material are safely removed? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 13</i>] XIII. Petroleum and Flammable Materials - Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.126 If the facility dispenses any class of petroleum or flammable material, has it received specific approval from the Commissioner to do so? [<i>Fire Safety Act, Section 36(2)</i>] See protocol for notes. XIII. Petroleum and Flammable Materials - Storage Comments:			
Q16.127 If the facility stores or keeps flammable material, does it ensure that the storage or keeping is conducted in accordance with the following requirements: [<i>Fire Safety Act, Section 35</i>] – In a premises licensed by the Commissioner for the storage or keeping of the flammable material; – In the quantity and manner prescribed; and – In accordance with the provisions and conditions of the license? XIII. Petroleum and Flammable Materials - Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.128 Does the facility maintain, for at least two years from the date of the last entry, a register of all petroleum and flammable materials stored at the premises, and does the register include the following information: [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 18</i>] <RECORD KEEPING> – Total quantity of each material stored; – Actual quantity of each material stored in each tank and container; – A Material Safety Data Sheet (MSDS) for each material stored; – Records of the movement of all materials; and – Any other information required by the Commissioner? XIII. Petroleum and Flammable Materials - Storage Comments:			
Q16.129 Does the facility ensure that no tank involved in an explosion or fire is used for storage of petroleum without the written permission of the Commissioner? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 55(4) and (5)</i>] XIII. Petroleum and Flammable Materials - Storage Comments:			
Q16.130 Is each tank, piping and valve that is used in the storage of petroleum or flammable material marked with a distinct means of identification to indicate the petroleum or flammable materials with which the tank, piping or valve is intended to be used? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 51(2)</i>] XIII. Petroleum and Flammable Materials - Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.131 Does the facility ensure that no petroleum or flammable material is permitted to flow into any public drain or sewer? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 56(1)</i>] XIII. Petroleum and Flammable Materials - Storage Comments:			
Q16.132 If there is an accidental release of petroleum or flammable material into any public drain or sewer, does the facility have the affected area cleaned up and restored to normal as soon as practicable? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 56(2)</i>] XIII. Petroleum and Flammable Materials - Storage Comments:			
Q16.133 Are all containers for storing or transporting petroleum or flammable material designed and constructed in accordance with an accepted code of practice and other specifications as directed by the Commissioner? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 48</i>] See protocol for notes. XIII. Petroleum and Flammable Materials - Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.134 Is every container used to store petroleum or flammable materials affixed with the appropriate emergency information panel(s) and/or warning label(s), and are a sufficient number of emergency information panels installed at the approved storage area? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 46(1)-(2)</i>] See protocol for notes. XIII. Petroleum and Flammable Materials - Storage Comments:			
Q16.135 Does the facility ensure that emergency information panel(s) and/or warning label(s) meet the following requirements: [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 46(3)</i>] – Made of material that is weather and corrosion resistant; – Indelibly marked; – Rigid or fixed to be rigid; – Marked on or securely attached to the container in a substantially vertical plane; and – Kept clean and free from obstruction? See protocol for notes. XIII. Petroleum and Flammable Materials - Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.136 Are all containers that are no longer used for the storage of petroleum or flammable material kept securely closed and stored only in licensed premises or in a place approved by the Commissioner? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 50</i>] XIII. Petroleum and Flammable Materials - Storage Comments:			
Q16.137 Have all cylinders used to store Class 0 petroleum been inspected and/or passed any tests specified in an accepted code of practice, and are they marked with the date of the tests and/or inspections? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 52(1) and (2)</i>] XIII. Petroleum and Flammable Materials - Storage Comments:			
Q16.138 Does the facility ensure that the name of the supplier and the information stamped on any cylinder that is used to store Class 0 petroleum is not altered, modified or defaced, has no other information added to it, and is not partly removed, erased or obliterated? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 52(3)</i>] XIII. Petroleum and Flammable Materials - Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.139 Does the facility ensure that the following requirements with regard to Class 0 cylinders are met: [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 52(5) and (6)</i>] – All cylinders are requalified periodically for continued service, in accordance with an approved code of practice; and – The maximum gross weight of cylinders containing Class 0 petroleum that are transported from the bottling plant to a centralized store does not exceed 10,000 kilograms? XIII. Petroleum and Flammable Materials - Storage Comments:			
Q16.140 If the facility operates a petroleum or flammable material dispensing station on site, does it ensure that the following requirements are in place: [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 28(1)</i>] – No person other than a person authorized by the licensee is allowed to operate any dispensing equipment at the station; – Dispensing from a tanker into any storage tank is not conducted except under the close supervision of a person who has knowledge of and experience with the dispensing operation; – Dispensing into any storage tank of the dispensing station is only conducted if the tank has been checked immediately prior to dispensing and found to be capable of receiving the material without overflowing and any opening for the measurement of the liquid level in the storage tank has been closed; – Petroleum or flammable material is not dispensed into the fuel tank of any vehicle while that vehicle's engine is running; – The maximum quantity of petroleum that is dispensed into a container (other than a vehicle fuel tank) does not exceed 20 liters at any one time unless the written approval of the Commissioner has been obtained; – The maximum quantity of petroleum or flammable material that is dispensed into a container does not exceed that specified by the Commissioner, unless the written approval of the Commissioner has been obtained;			

	Not Applicable	Complies	Does Not Comply
– No vehicle used to transport petroleum or flammable material is parked within the dispensing station except for the purpose of refueling or dispensing; – No lighted candle, lighted cigarette, burning of joss sticks, joss paper or any other naked light, fire or flame is permitted within the precincts of a dispensing station at any time; – Warning notices stating "Switch Off Engine," "No Smoking," and "No Naked Lights" are prominently displayed at the dispensing area; – Security barriers in the form of permanent and removable bollards with thick chains are installed and used at all entrances and exits of the petroleum filling station during all refilling operations involving tankers, if ordered by the Commissioner; – All access points to all underground petroleum or flammable material storage tanks are secured by means of locking devices or other security measures to prevent unauthorized access; – Sufficient numbers of closed circuit cameras are installed at the petroleum or flammable material dispensing station to cover the forecourt, backcourt, workshop, dispensing areas and other critical areas; and – The facility complies with any other directions of the Commissioner relating to fire safety or the storage, transportation, dispensing or handling of petroleum? XIII. Petroleum and Flammable Materials - Storage Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.141 If the facility experienced a loss, theft, leakage, accident or accidental discharge of petroleum or flammable material, did it take the following steps: [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 55(1) through (3)</i>] – Implemented the Emergency Response Plan (see the Subsection entitled, “Petroleum and Flammable Materials - Emergency Response Plans”); – Informed the Commissioner of the incident; – Took the necessary actions to have the affected areas and resources decontaminated, cleaned and restored to normal; and – Provided a detailed written report to the Commissioner as soon as practicable containing the following information: – Circumstances leading to the incident; – Immediate actions and mitigating measures taken; – Measures taken to restore the affected areas; and – Measures taken to prevent a recurrence of a similar nature? XIII. Petroleum and Flammable Materials - Storage Comments:			
Q16.142 If the facility imports any class of petroleum or any flammable liquid, does it comply with the following requirements: [<i>Fire Safety Act, Section 35A</i>] – It obtains a valid license from the Commissioner to do so, if required by the regulations (see Question 16.123); – The importation is in accordance with the provision of the license and every condition specified therein; and – The importation is in the quantity, manner, and under the conditions that are prescribed? See protocol for notes. XIV. Petroleum and Flammable Materials - Import Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.143 Has the facility obtained an import license if it intends to import quantities of petroleum or flammable materials greater than the following: [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 15 and Second Schedule</i>] – Import by land of petroleum in excess of: – Class 0 petroleum - Total of 130 kg (gross weight) in not more than 2 cylinders; – Class I petroleum - 20 liters; – Class II petroleum - 200 liters; or – Class III petroleum - 200 liters; or – Import by land of flammable material in excess of: – Solid flammable material - 10 kg; – Liquid flammable material - 20 liters; or – Gaseous flammable material - 130 kg (gross weight) in not more than 2 cylinders? XIV. Petroleum and Flammable Materials - Import Comments:			
Q16.144 Does the facility ensure that every container used for the import of petroleum or flammable materials in excess of the quantities given in Question 16.123 is designed, constructed, maintained and labeled in accordance with an approved code of practice? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 16</i>] XIV. Petroleum and Flammable Materials - Import Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.145 Does the facility meet the following import requirements: [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 17</i>] – Accepts delivery of the imported petroleum or flammable materials only at the following locations: – A wharf in Singapore, if the material is imported by water; – An air cargo terminal in Singapore if the material is imported by air; or – Tuas Checkpoint or another place specified by the Commissioner as a substitute, if the material is imported by land; and – Does not accept delivery of petroleum or flammable material by rail? XIV. Petroleum and Flammable Materials - Import Comments:			
Q16.146 Does the facility maintain an up-to-date Emergency Response Plan, prepared in accordance with guidelines issued by the Commissioner, to deal with any spillage, leakage, accidental discharge or emergency which may arise from the storage of petroleum and/or flammable materials? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 27(1) and (2)</i>] <RECORD KEEPING> See protocol for notes. XV. Petroleum and Flammable Materials - Emergency Response Plans Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.147 Does the Emergency Response Plan contain the following information: [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 27(4)</i>] – Identification of likely accident scenarios and establishment of likely impact zones; – Notification and activation procedures; – Response actions to contain and control the release and to mitigate the impact zones; – Monitoring of the affected areas, including those off site; – Procedures for decontamination and clean-up of the affected area; – Names of personnel with their assigned roles and responsibilities for dealing with the emergency (including decontamination and clean-up); – List of emergency response equipment available for dealing with the emergency, including protective gear, fire-fighting equipment, oversized drums, emergency containers or tankers, absorbents, neutralizing agents, monitoring equipment and clean-up equipment; and – Any other information required by the Commissioner? XV. Petroleum and Flammable Materials - Emergency Response Plans Comments:			
Q16.148 Does the facility update its Emergency Response Plan and submit it to the Commissioner for approval within one month of any change that may affect the validity or effectiveness of the plan? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 27(6)</i>] XV. Petroleum and Flammable Materials - Emergency Response Plans Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.149 Does the facility amend, update or test the Emergency Response Plan at any time it is requested to do so by the Commissioner? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 27(5) and (7)</i>] XV. Petroleum and Flammable Materials - Emergency Response Plans Comments:			
Q16.150 Does the facility ensure that all persons working at the premises are familiar with the contents of the Emergency Response Plan? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 27(3)</i>] XV. Petroleum and Flammable Materials - Emergency Response Plans Comments:			
Q16.151 Does the facility ensure that adequate trained personnel and equipment are available on the premises at all times to deal with emergencies? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 27(8)</i>] XV. Petroleum and Flammable Materials - Emergency Response Plans Comments:			
Q16.152 Does the facility implement the Emergency Response Plan in the event of any emergency involving the petroleum or flammable material stored at the facility? [<i>Fire Safety (Petroleum and Flammable Materials) Regulations, Regulation 27(9)</i>] XV. Petroleum and Flammable Materials - Emergency Response Plans Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.153 Are all materials used in piping systems capable of resisting the chemical action of the substances handled? [<i>CP 27:1999, Section 1.12.1</i>] XVI. Piping Systems - Safety Considerations Comments:			
Q16.154 Are all pipes, fittings and valves used in any piping system designed to withstand the maximum pressure and temperature to which they may be subjected? [<i>CP 27:1999, Section 1.12.2</i>] XVI. Piping Systems - Safety Considerations Comments:			
Q16.155 Are all piping systems installed so as to prevent siphoning of the contents of any vessel? [<i>CP 27:1999, Section 1.12.3</i>] XVI. Piping Systems - Safety Considerations Comments:			
Q16.156 Is all pipework sufficiently flexible to allow for the total expansion and contraction that may occur during use? [<i>CP 27:1999, Section 1.12.4</i>] XVI. Piping Systems - Safety Considerations Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.157 Is all pipework supported and secured so that no undue strain is put on the installation at any time? [CP 27:1999, Section 1.12.5] XVI. Piping Systems - Safety Considerations Comments:				
Q16.158 Is all pipework securely anchored at locations between bends or expansion joints with the remainder of the piping carried on adjustable hangers or properly aligned supports? [CP 27:1999, Section 1.12.5] XVI. Piping Systems - Safety Considerations Comments:				
Q16.159 Is pipework run in such a way that the pipework and the associated valves are not hidden from view and that the pipework and associated valves are accessible for maintenance? [CP 27:1999, Section 1.12.6] XVI. Piping Systems - Safety Considerations Comments:				
Q16.160 Is all pipework above floors, platforms, gangways, common corridors and stairways not less than 2.3 meters between the lowest part of the pipe or any fitting and the floors, platforms, gangways, common corridors or stairways below? [CP 27:1999, Section 1.12.7] XVI. Piping Systems - Safety Considerations Comments:				

		Not Applicable	Complies	Does Not Comply
Q16.161 Is all exposed refrigerant pipe and drainpipe along common corridors properly insulated against condensation? [<i>CP 27:1999, Section 1.12.8</i>] XVI. Piping Systems - Safety Considerations Comments:				
Q16.162 For pipework running across areas not designated as access areas, is ample clearance provided between the lowest point of the pipework and the floor so that there will be no accumulation of any fluid and so that maintenance or servicing work on the pipework can be carried out? [<i>CP 27:1999, Section 1.12.9</i>] XVI. Piping Systems - Safety Considerations Comments:				
Q16.163 Are all piping, fittings and valves of piping systems distinctly colored and marked in conspicuous places for identification of the contents, using either names or abbreviations or chemical symbols, or a combination of these? [<i>CP 27:1999, Section 1.12.11(a)</i>] XVI. Piping Systems - Safety Considerations Comments:				
Q16.164 Does the color marking of piping and associated fittings conform to the requirements of Annex C of <i>CP 27:1999</i> ? [<i>CP 27:1999, Section 1.12.11(b)</i>] See protocol for notes. XVI. Piping Systems - Safety Considerations Comments:				

	Not Applicable	Complies	Does Not Comply
Q16.165 Are the color markings for identification of piping applied by one of the following: [CP 27:1999, Section 1.12.11(c)] – Painted on the pipe over the whole length; – Painted on the pipe as a band, or applied by wrapping an adhesive band of the basic identification color around the pipe, over a length of about 150 millimeters, depending on the diameter of the pipe; or See protocol for notes. – An adhesive label of the basic identification color over a length of about 150 millimeters? XVI. Piping Systems - Safety Considerations Comments:			
Q16.166 Is the basic identification color for piping placed at all junctions, at both sides of valves, service appliances, bulkheads, wall penetrations and at any other place where identification is necessary? [CP 27:1999, Section 1.12.11(e)] XVI. Piping Systems - Safety Considerations Comments:			
Q16.167 Does every required pipe marking include all of the following: [CP 27:1999, Section 1.12.11(f)] – Identification color(s) as specified in Question 16.164; – The nature of the contents, as specified in Question 16.163; and – The direction of flow, as indicated by a white or black arrow that is in direct contrast to the basic identification color? XVI. Piping Systems - Safety Considerations Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.168 Are the precautions to be taken in handling the contents of any piping posted conspicuously at distribution points along the piping system? [<i>CP 27:1999, Section 1.12.12</i>] XVI. Piping Systems - Safety Considerations Comments:			
Q16.169 If the facility utilizes seamless metal gas containers (cylinders) for the storage of compressed gases other than dissolved acetylene, are the following requirements met: [<i>CP 12: Part 1:2000, Sections 4 through 8</i>] – The gas cylinders are inspected before and after filling; – The gas cylinders are also periodically inspected in accordance with the schedule listed in Table 1 (Intervals between periodic inspections and hydraulic tests) of <i>CP 12: Part 1:2000</i>; – The periodic tests include a sound test, a check for inadequate markings, an internal and external inspection, weighing, a check of the container neck threads, a hydraulic pressure test, a proof pressure test, and a hydraulic volumetric expansion test; – The gas cylinders are stamped with the date of manufacture or the last periodic test date (or a secondary method of recognition such as colored rings between the valve and the neck of the containers); and – Cylinders determined unsuitable for further service are destroyed by the testing station? See protocol for notes. XVII. Storage of Compressed Gases Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.170 If the facility utilizes cylinders for the storage of dissolved acetylene gas, does it ensure the following requirements are met: [CP 12: Part 2:1998, Sections 4 through 7] – The dissolved acetylene cylinders are inspected before and after filling; – The gas cylinders are also periodically inspected in accordance with the schedule listed in Table 1 (Periods between internal examinations of dissolved acetylene containers) of CP 12: Part 2:1998; – The periodic inspections include a check for inadequate markings, an internal and external inspection, a check of the container valves, neck threads, container fittings, an inspection of porous mass, weight, and solvent content; – The gas cylinders are stamped with the date of manufacture or the last periodic test date on a colored ring around the shank of the cylinder valve between the valve and the cylinder neck; and – Cylinders determined unsuitable for further service are destroyed by the testing station? XVII. Storage of Compressed Gases Comments:			
Q16.171 Does the facility ensure the following requirements are met with respect to a liquid oxygen storage installation: [CP 34:1985, Sections 5 - 12] – The installation is located in a separate, exclusive location; – The base of the installation site is raised to avoid ponding (pooling) and is made of concrete or a similar inorganic and non-porous substance; – The installation is clearly defined and surrounded by an open design and non-combustible barrier equipped with clearly marked emergency exits; – The equipment has been installed, tested and commissioned to the satisfaction of the oxygen supplier; – The installation avoids, as far as possible, pipelines carrying flammable liquids or gases (if unavoidable, the facility ensures the pipeline is continuous, is not located in a trench, and is positioned as far as possible from any likely source of liquid oxygen spillage);			

	Not Applicable	Complies	Does Not Comply
– The installation is not situated on top of any existing building; – If the installation cannot be situated away from an existing building and the installation space forms part of an existing building, a separate compartment has been erected at ground level of non-combustible material from floor to ceiling or roof, one of the walls is an outside wall, wire meshed if necessary to provide ventilation, and no trenches, manholes, cable ducts, gullies or traps are allowed in the enclosure; – The minimum distances from any bulk liquid oxygen storage container to various types of exposures (measured in the most direct line) are at least those indicated in <i>CP 34:1985</i>; See protocol for notes. – The installation is designed so that any tanker used for filling the installation is not required to be in a walled enclosure from which the escape of liquid or heavy vapor is restricted; – The installation is positioned so that it is not necessary for a tanker to stand on a public highway or public ground while in the process of transferring liquid to or from a stationary container; – Notices with the words "Liquid Oxygen" are prominently displayed at the installation; – Signs prohibiting smoking, open flames and unauthorized personnel are prominently displayed at the installation; and – Controls for emergency operation of the installation are clearly labeled and up-to-date and legible emergency operating instructions are displayed immediately adjacent to the emergency controls? XVIII. Storage of Bulk Liquid Oxygen Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.172 If the facility imports, stores, manufactures, transports, sells or exports any radioactive material, does it have a license to do so? [<i>Radiation Protection Act 2007, Section 5</i>] XIX. Radioactive Materials - General Comments:			
Q16.173 If the facility manufactures, sells, or otherwise deals in, imports or exports, or has control of an irradiating apparatus, does it have a license to do so? [<i>Radiation Protection Act 2007, Section 6(1)</i>] and [<i>Radiation Protection (Non-Ionising Radiation) Regulations, Regulation 7</i>] XIX. Radioactive Materials - General Comments:			
Q16.174 If the facility has a license for either radioactive materials or radioactive apparatus and the facility changes its address, does it notify the Director-General within two weeks of the change of address? [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 11</i>] and [<i>Radiation Protection (Non-Ionising Radiation) Regulations, Regulation 12</i>] XIX. Radioactive Materials - General Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.175 Does the facility give immediate notice to the Director-General of every sale of a licensed irradiating apparatus together with the name and address of the person to whom it was sold? [<i>Radiation Protection Act 2007, Section 6(2)</i>] XIX. Radioactive Materials - General Comments:			
Q16.176 Does the facility give immediate notice to the Director-General of every purchase of a licensed irradiating apparatus together with the name and address of the person from whom it was purchased? [<i>Radiation Protection Act 2007, Section 6(3)</i>] XIX. Radioactive Materials - General Comments:			
Q16.177 Does the facility obtain prior written approval from the Director-General before disposing of irradiating apparatus, whether in a working condition or otherwise? [<i>Radiation Protection Act 2007, Section 6(4)</i>] XIX. Radioactive Materials - General Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.178 Does the facility ensure the following requirements are met with respect to the storage of radioactive materials: [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 24(1)</i>] – Radioactive materials are stored in a manner that will prevent unauthorized individuals from gaining access to them; – Radioactive materials are not stored in a manner that will allow a radiation level exceeding 0.5 microsievert per hour outside the defined area in which the radioactive materials are stored; and – Radioactive materials are not stored in a manner that will cause any person other than a radiation worker to receive a radiation dose in excess of 20 microsieverts in a period of seven consecutive days? XX. Radioactive Materials - Ionising Radiation Comments:			
Q16.179 Does the facility ensure that all vaults or rooms where radioactive materials are stored, kept, used or handled and where any radionuclide in gaseous, vapor or aerosol form may be emitted, are ventilated so that the radionuclide is not a radiation hazard and will not be present at any time in the vault or room in a concentration such that inhalation or ingestion by an individual exceeds one-twentieth of the ALI specified for that radionuclide (see the Subsection entitled, "Radiation - General" of Section 15.0 of this protocol)? [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 24(2)</i>] XX. Radioactive Materials - Ionising Radiation Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.180 If radioactive materials are stored temporarily (or when not in use) in a workroom, laboratory, or another place where an individual is regularly or frequently present, are they are enclosed in containers or otherwise shielded so that the following conditions are met: [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 24(3)</i>] – The average radiation level at 5 cm from the surface of each container does not exceed 40 microsieverts per hour and the maximum radiation level does not exceed 200 microsieverts per hour; and – The average radiation level at 1 meter from the center of each source does not exceed 4 microsieverts per hour and the maximum radiation level does not exceed 20 microsieverts per hour? XX. Radioactive Materials - Ionising Radiation Comments:			
Q16.181 Where there is any possibility that a chemical, radiation, or other action might weaken or rupture the container of radioactive material sufficiently to cause leakage from the container, is the container provided with a secondary tray or catchment adequate to retain the entire amount of the radioactive material stored in the container? [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 25(1)</i>] XX. Radioactive Materials - Ionising Radiation Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.182 Are all storage containers for radioactive materials in excess of 35 GBq designed to meet the following requirements: [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 25(2)</i>] – Resistant to fire, shock or stress; – Able to withstand any temperature that may be reasonably anticipated; and – Structurally sound, with regard to corrosion, radiation, temperature effects and chemical or other action that may develop over the period of intended storage or use? XX. Radioactive Materials - Ionising Radiation Comments:				
Q16.183 Has the facility made provisions to minimize the radiation hazard to any individual who might perform emergency work in or around the area where radioactive material is stored in the event of fire, flood or any other catastrophe or emergency? [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 25(3)</i>] XX. Radioactive Materials - Ionising Radiation Comments:				
Q16.184 Is every irradiating apparatus labeled with a label that is securely attached to the apparatus and that displays the standard radiation hazard symbol and the words "DANGER - RADIATION. This apparatus produces radiation when energized." immediately adjacent to the symbol? [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 19(1a)</i>] See protocol for notes. XX. Radioactive Materials - Ionising Radiation Comments:				

	Not Applicable	Complies	Does Not Comply
Q16.185 Is every irradiating apparatus and container that contains a radioactive substance labeled with a label that is securely attached to the apparatus or the container that displays the following information: [<i>Radiation Protection (Ionising Radiation) Regulations, Regulations 19(1b) and 20</i>] – The standard radiation hazard symbol together with the words “DANGER - RADIOACTIVE” immediately adjacent to the symbol; and – A listing of the kind and activity of the radioactive substance(s) in the irradiating apparatus and the date of measurement of the activity? XX. Radioactive Materials - Ionising Radiation Comments:			
Q16.186 Does every area where a radiation hazard may exist display a notice containing the standard radiation hazard symbol in the following places: [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 21(1)</i>] – Near each place where any radioactive material or any irradiating apparatus is used; – At each entrance to any place where any radioactive material is used or stored; and – At each entrance to any place where any irradiating apparatus is used? See protocol for notes. XX. Radioactive Materials - Ionising Radiation Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.187 If the facility has any premises where the total amount of radioactive materials kept or stored exceeds 35 GBq, are all main entrances to the premises labeled with a notice that is clearly visible to any individual entering the premises that states that radioactive materials are kept or stored on the premises? [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 21(3)</i>] XX. Radioactive Materials - Ionising Radiation Comments:			
Q16.188 Do all labels and notices required in Question 16.184 through Question 16.187 meet the following conditions: [<i>Radiation Protection (Ionising Radiation) Regulations, Regulations 22 and 23</i>] – Are as large as is practicable in each circumstance; – Are not used in any areas or used to label any substances that are not a radiation hazard; and – Are immediately removed when any radiation hazard ceases to exist? XX. Radioactive Materials - Ionising Radiation Comments:			
Q16.189 Does the facility keep a book containing a record of the following information in respect to radioactive materials: [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 26(1)</i>] <RECORD KEEPING> – The date of receipt; – The nature and form of the radioactive material and the date received; – The activity of the radioactive material and the date specified by the manufacturer; – The whereabouts of the radioactive material, kept up to date on each working day; and			

	Not Applicable	Complies	Does Not Comply
– If the radioactive material is a sealed source: – The distinguishing number or other identifying mark; and – The date and the manner of disposal of the sealed source; or – If the radioactive material is an unsealed source: – The quantity used each time and the date and purpose of use; and – The date and the manner of disposal of the radioactive material or any portion of it? See protocol for notes. XX. Radioactive Materials - Ionising Radiation Comments:			
Q16.190 If radioactive materials are reported as lost or mislaid, does the facility ensure that immediate steps are taken to find the radioactive material, and if the material is not accounted for within 24 hours, the Director-General is notified immediately? [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 26(4)</i>] See protocol for notes. XX. Radioactive Materials - Ionising Radiation Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.191 If any sealed source is transported within the facility (per the license) does the transport meet the following conditions: [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 27</i>] – Material is transported in a suitable container or by other appropriate methods so that the same requirements for radiation levels as required in Question 16.180 are met, unless the Director-General directs otherwise; – Material is transported by or under the immediate supervision of the license holder or a radiation worker authorized by the license holder; and – The individual receiving the material is made aware that he/she is receiving a sealed radioactive source? XX. Radioactive Materials - Ionising Radiation Comments:			
Q16.192 If any unsealed radioactive source is transported within the facility (per the license) does the transport meet the following conditions: [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 28</i>] – Material is enclosed within a suitable container adequately shielded so that the same requirements for radiation levels as required in Question 16.180 are met, unless the Director-General directs otherwise; – Material is transported by or under the immediate supervision of the license holder or a radiation worker authorized by the license holder; and – The material has a tag attached to the container giving the following information: – Name of the isotope; – Nature, physical and chemical form; and – Activity with date? XX. Radioactive Materials - Ionising Radiation Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.193 Does the facility ensure that every person who has a sealed source under their control does the following, unless the Director-General directs otherwise: [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 29(1)</i>] – Ensures that a wipe test to test for leakage of radioactive substance is made by a qualified individual, at least every 12 months, of the following: – The bonding of a sealed source that does not have an immediate container; and – Every container in which such a sealed source is permanently installed but which does not form part of the sealed source; – Maintains a register containing the required particulars of every wipe test carried out as above; and <RECORD KEEPING> – Informs the Director-General immediately if any wipe test carried out as above is positive? XX. Radioactive Materials - Ionising Radiation Comments:			
Q16.194 If any radioactive substance is leaking, or is likely to leak from the immediate container or the bonding which forms part of a sealed source, or in the event that the immediate container or the bonding which forms part of a sealed source is broken, are the following steps taken: [<i>Radiation Protection (Ionising Radiation) Regulations, Regulation 29(2)</i>] – The Director-General is informed immediately; – All practicable measures are taken forthwith to safeguard every individual present in the vicinity of the sealed source, including, where necessary, the immediate evacuation of all appropriate areas; – The immediate container or bonding is placed in a leak-proof container forthwith and is not brought into use until all necessary repairs have been done; and			

	Not Applicable	Complies	Does Not Comply
– Effective steps to decontaminate any areas affected by the radioactive substance are taken as soon as practicable by or under the supervision of the license holder or an individual approved by the Director-General as qualified to do so, with any person undertaking the decontamination being properly equipped for the purpose? XX. Radioactive Materials - Ionising Radiation Comments:			
Q16.195 If the facility possesses a First or Second Schedule biological agent, does it have an authorization to do so from the Director of Medical Services? [<i>Biological Agents and Toxins Act, Sections 6(2), 14(1)</i>] XXI. Biological Agents and Toxins Comments:			
Q16.196 If the facility is granted approval to possess a First or Second Schedule biological agent, does it ensure that the agent is kept or used only at the place specified in the authorization? [<i>Biological Agents and Toxins Act, Sections 6(4), 15(3)</i>] See protocol for notes. XXI. Biological Agents and Toxins Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.197 If the facility conducts or procures any large-scale production of a First or Third Schedule biological agent, does it have an authorization to do so from the Director of Medical Services? [<i>Biological Agents and Toxins Act, Sections 7(1)(a), 23(1)(a)</i>] XXI. Biological Agents and Toxins Comments:			
Q16.198 Is any large-scale production of First or Third Schedule biological agents conducted in accordance with the conditions and at the place specified in the authorization? [<i>Biological Agents and Toxins Act, Sections 7(1)(b), 21(1)(b)</i>] XXI. Biological Agents and Toxins Comments:			
Q16.199 Does the facility ensure that it does not carry out or procure any large-scale production of a Second Schedule biological agent? [<i>Biological Agents and Toxins Act, Section 16(1)</i>] XXI. Biological Agents and Toxins Comments:			
Q16.200 If the facility imports or transships a First, Second or Fourth Schedule biological agent, or a Fifth Schedule toxin, does it have a permit from the Director of Medical Services to do so? [<i>Biological Agents and Toxins Act, Sections 8(1), 17(1), 25(1), 32(1-2)</i>] XXI. Biological Agents and Toxins Comments:			

		Not Applicable	Complies	Does Not Comply
Q16.201 Is any import, export or transshipment carried out in accordance with the conditions of the facility's permit? [<i>Biological Agents and Toxins Act, Sections 8(2), 17(2), 25(1), 32(1-2)</i>] See protocol for notes. XXI. Biological Agents and Toxins Comments:				
Q16.202 If the facility does not receive a consignment of First Schedule (Part II) or Second Schedule, biological agents, or of a Fifth Schedule toxin, to which an import permit relates, does the facility immediately notify the Director of Medical Services? [<i>Biological Agents and Toxins Act, Sections 9(1), 18(1), and 33(1)</i>] See protocol for notes. XXI. Biological Agents and Toxins Comments:				
Q16.203 If the facility holds an import permit for a First or Second Schedule biological agent or a Fifth Schedule toxin and the biological agent or toxin must be stored pending delivery or transshipment, does the facility ensure that the biological agent or toxin is stored in a safe and secure place, and that the storage is carried out in accordance with any prescribed requirements? [<i>Biological Agents and Toxins Act, Sections 10(1-2), 19(1-2), and 34(1-2)</i>] XXI. Biological Agents and Toxins Comments:				

	Not Applicable	Complies	Does Not Comply
Q16.204 Does the facility ensure that it does not transfer a First or Second Schedule biological agent, or a Fifth Schedule toxin, to anyone unless they hold the proper approval or authorization (full use or excluded purposes) or are located outside of Singapore? [<i>Biological Agents and Toxins Act, Sections 11(1-2), 20(1-2), and 35(1-2)</i>] XXI. Biological Agents and Toxins Comments:			
Q16.205 If the facility transfers a First Schedule (Part II) or Second Schedule biological agent, or a Fifth Schedule toxin, does it notify the appropriate parties of the appropriate information, as follows: [<i>Biological Agents and Toxins Act, Sections 12(1), 21(1), and 36(1)</i>] – The Director of Medical Services of the proposed transfer within the time specified by the Director; – The transferee of the estimated time of receipt; and – The carrier, prior to the dispatch of the agent, including informing them of the 24-hour emergency number that is monitored at all times by a person who has knowledge of the hazards and characteristics of the biological agent being transported, or who has immediate access to a person with this knowledge? XXI. Biological Agents and Toxins Comments:			
Q16.206 Does the facility ensure that it does not send or receive First, Second, Third, or Fourth Schedule biological agents, or Fifth Schedule toxins, through the mail or by public transportation? [<i>Biological Agents and Toxins Act, Sections 13(1), 22(1), 24(1), 26(1), and 37(1)</i>] See protocol for notes. XXI. Biological Agents and Toxins Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.207 If the facility inactivates or procures the inactivation of any First or Second Schedule biological agent, does it have an approval to possess the agent, and is the inactivation carried out in accordance with any method approved by the facility's biosafety committee? [<i>Biological Agents and Toxins Act, Section 27(1)</i>] See protocol for notes. XXI. Biological Agents and Toxins Comments:			
Q16.208 If the facility imports an inactivated First or Second Schedule biological agent, does it have a permit to do so, and is the import carried out in accordance with the conditions of the permit? [<i>Biological Agents and Toxins Act, Section 28(1)</i>] See protocol for notes. XXI. Biological Agents and Toxins Comments:			
Q16.209 If the facility possesses a Fifth Schedule toxin, does it have an authorization from the Director of Medical Services? [<i>Biological Agents and Toxins Act, Section 31(1)</i>] XXI. Biological Agents and Toxins Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.210 If the facility has an approval to possess a Fifth Schedule toxin, is the toxin used and stored only at the location(s) and under the conditions specified in the approval? [<i>Biological Agents and Toxins Act, Section 31(3)</i>] See protocol for notes. XXI. Biological Agents and Toxins Comments:			
Q16.211 If the facility uses, handles or stores any hazardous substances, does it achieve compliance with the following requirements: [<i>Workplace Safety and Health (General Provisions) Regulations 2006, Regulation 43(1)</i>] – It has obtained a safety data sheet (SDS) for the substance; – It assesses the information in the SDS and takes precautionary measures to ensure the safe use of the substance; and – It makes the SDS available to all persons at work in the facility who are liable to be exposed to the substance? XXII. Material Safety Data Sheets Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.212 If the facility sells, is the agent of any seller, or procures for sale any hazardous substance for use in a professional setting, has an SDS for the substance been provided to the buyer giving accurate and adequate information, so far as is reasonably practicable, on the following: [<i>Workplace Safety and Health (General Provisions) Regulations 2006, Regulation 43(2)</i>] – Identity of the substance; – Safety and health hazards; – Composition of and ingredients used in the substance; – First-aid measures; – Fire-fighting measures; – Accidental release measures; – Precautions to be taken and safe handling and storage; – Exposure controls and personal protection needed; – Physical and chemical properties; – Stability and reactivity of the substance; – Toxicological properties; – Ecological information; – Disposal considerations; – Transport; – Regulatory information; and – Any other relevant information? See protocol for notes. XXII. Material Safety Data Sheets Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.213 If the facility sells, is the agent of any seller, or procures for sale any hazardous substance for use in a professional setting, does it ensure that SDS issued by the facility conform to the following specifications: <i>[Guidelines on the Preparation of Material Safety Data Sheets (MSDS)]</i> – Are written in English (with translations available if appropriate); – Language is clear, simple and concise; – No information items are left blank (use expressions such as “not applicable” or “not available” where appropriate); – Abbreviations are not used, or, if they must be used, a legend is provided; – All pages are numbered, with the total number of pages given on each page (i.e., page 1 of 3); – The month and year of issue of the SDS is indicated on each SDS with the month written out, rather than a number designation; and – Standard International units are used? See protocol for notes. XXII. Material Safety Data Sheets Comments:			

	Not Applicable	Complies	Does Not Comply
Q16.214 If the facility sells, is the agent of any seller, or procures for sale any hazardous substance for use in a professional setting, are all SDS reviewed and, if necessary, reissued under the following conditions: [<i>Guidelines on the Preparation of Material Safety Data Sheets (MSDS)</i>] – Whenever there is a change in formulation which affects the properties of the substance, alters the form or appearance of the substance, or alters the mode of application of the substance; – Whenever there is a change to the substance which alters its health and/or safety hazard or risk; – Whenever new health and/or safety information becomes available; – To reflect new regulations, standards, codes of practice or guidelines; and – At least every 5 years, in the absence of review for any other reason? XXII. Material Safety Data Sheets Comments:			
Q16.215 Does every SDS issued cover all major uses for a substance? [<i>Guidelines on the Preparation of Material Safety Data Sheets (MSDS)</i>] XXII. Material Safety Data Sheets Comments:			

17.0 CONSTRUCTION WORK SITE SAFETY

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

– I. Permits and Notifications	17-4
– II. Construction Work Safety and Coordination	17-9
– III. General Requirements for Construction Works.....	17-10
– IV. Technical Requirements for Construction Works.....	17-11
– V. Building and Civil Engineering Work - General Requirements	17-15
– VI. Building and Civil Engineering Work - Safety Measures	17-21
– VII. Building and Civil Engineering Work - Excavation and Demolition.....	17-34
– VIII. Building and Civil Engineering Work - Passing Vehicular Traffic.....	17-36
– IX. Building and Civil Engineering Work - Work at Heights	17-38
– X. Demolition Work Involving Synthetic Inorganic Fibers.....	17-42

Tables or Appendices referenced in the protocol are located at the end of this section, along with a link to our audit scorecard, entitled [Audit Quick Check](#). This protocol applies to facilities located throughout Sweden.

Key Legislation and Regulations

Key legislation and regulations covered in this protocol are noted as follows:

National

- **Work Environment Act, SFS 1977:1160, 19 December 1977, as last amended by SFS 2010:1545, 2 December 2010 (Arbetsmiljölagen), 19 December 1977 as amended through 2 December 2010.** The purpose of this Act is to prevent injuries and accidents at work and to generally achieve a good working environment. Subject to some restrictions, this Act applies to every activity in which employees work on an employer's account. The Act

contains general stipulations and principles on the nature of the working environment, general obligations in the workplace, employment of minors, as well as provisions on cooperation between employers and employees, etc.

- **Planning and Building Ordinance, SFS 1987:383, 21 May 1987, as last amended by SFS 2010:168, 4 March 2010 (Plan- och byggförordning), 21 May 1987 as amended through 4 March 2010.** This Ordinance contains instructions for the application of the [*Planning and Building Act, SFS 2010:900*](#). It mentions, for example, how written applications for building permits must be drawn up and also mentions specific requirements for quality managers.
- **Building Regulations, BFS 1993:57, 22 December 1993, as last amended by BFS 2010:29 (BBR 17), 21 December 2010 (Boverkets byggregler), 22 December 1993 as amended through 21 December 2010.** These Regulations include requirements that affect ongoing use of a building, including inspection of the energy efficiency of systems and maintenance of the fire protection equipment and systems.
- **Ordinance on Technical Requirements for Construction Works, Etc., SFS 1994:1215, 25 August 1994, as last amended by SFS 2010:132, 4 March 2010 (Förordning om tekniska egenskapskrav på byggnadsverk m.m.), 25 August 1994 as amended through 4 March 2010.** This Ordinance states that construction projects must be planned and built so that they will not cause any unacceptable risk of accidents upon their use and during operation. It also seeks to avoid health damage to operators or surrounding inhabitants caused by the level of noise. It was issued under the *Act on Technical Requirements for Construction Works, Etc., SFS 1994:847* which has now been repealed and incorporated into the [*Planning and Building Act, SFS 2010:900*](#). As of the date of this protocol, the Ordinance remains in effect.
- **Building and Civil Engineering Work, AFS 1999:3, 19 April 1999, as last amended by AFS 2009:12, 17 November 2009 (Byggnads- och anläggningsarbete), 19 April 1999 as amended through 17 November 2009.** These Provisions apply to the planning and performance of building and civil engineering work. They also apply to the design phase, which precedes building and civil engineering work, where there is an effect on the working environment to those who perform the work. In some cases, a safety and health (work environment) plan must be drawn up and remain accessible.
- **Synthetic Inorganic Fibers, AFS 2004:1, 22 January 2004, as last amended by AFS 2005:13, 15 February 2005 (Syntetiska oorganiska fibrer), 22 January 2004 as amended through 15 February 2005.** These Provisions apply to all activities which involve the handling of synthetic inorganic fibers or materials containing more than 5 percent synthetic inorganic fibers including workplaces where dust is produced following the regular treatment and handling of products made of ceramic fibers, special fibers or glass fibers.

- **Planning and Building Act, SFS 2010:900, 1 July 2010, as last amended by SFS 2010:1983, 16 December 2010 (Plan- och bygglag), 1 July 2010 as amended through 16 December 2010.** This Act contains requirements for construction project management and planning. The Act regulates siting, design and maintenance of construction projects. The Act specifies requirements relating to construction project oversight, permitting and coordination with local development plans. The new [Planning and Building Act, SFS 2010:900](#) repeals and incorporates requirements of the former *Act on Technical Requirements for Construction Works, SFS 1994:847*.

European Union

None.

This protocol section updates information contained in the prior version (2009). Specific additions, deletions and other changes made relative to the earlier version of the protocol are summarized in Appendix 17-A.

Topics and Questions

Notes: Some requirements in Section 10.0 of this protocol, General Health and Safety, and Section 15.0 of this protocol, Industrial Hygiene, apply to temporary workplaces. A construction site may be considered a temporary workplace. See Section 10.0 of this protocol and Section 15.0 of this protocol for additional requirements.

See Section 7.0 of this protocol for information on the Swedish Environmental Protection Agency's *Guidelines on Noise From Building Sites, NFS 2004:15*, which covers guidelines for noise emissions from construction.

I. Permits and Notifications

Notes: The following terms are used in this subsection: [[Planning and Building Act, SFS 2010:900, Chapter 3, Sections 1 through 4, and Chapter 4, Sections 2 through 4](#)]

- “Comprehensive plan” refers to a plan prepared by a municipality, which provides guidance for decisions about the use of land and water areas and about the development and preservation of the built environment; it is guidance and, therefore, is not binding;
- “Construction client” (*byggherre*) refers to someone who performs or causes to be performed any construction planning, building, demolition or site development work; and
- “Detailed development plan” refers to a plan established by a municipality to regulate water area use, land use and building within the municipality; regulations implementing a detailed development plan are not required if adequate control is achieved through other requirements.

The [Planning and Building Act, SFS 2010:900](#), covers building permits (*bygglov*), demolition permits (*rivningslov*) and site improvement permits (*marklov*). [[Planning and Building Act, SFS 2010:900, Chapter 9, Section 41](#)] Permits cease to be valid if the permitted activity has not been initiated within two years and completed within five years of the date the permit was granted. [[Planning and Building Act, SFS 2010:900, Chapter 9, Section 43](#)]

For actions not required to have a building permit, demolition permit or site improvement permit, the Municipal Building Committee may be requested to review them as if the action were required to have a permit. Any permit granted under such a review must conform to the regulations. [[Planning and Building Act, SFS 2010:900, Chapter 9, Section 14](#)]

17.1 Does the facility have a building permit if it undertakes any of the following activities: [\[Planning and Building Act, SFS 2010:900, Chapter 9, Section 2\]](#)

- Erects a building;
- Erects extensions to a building;
- Uses or adapts a building either wholly or partly for a purpose substantially different from the purpose for which the building previously had been used or for which a building permit was previously granted; or
- Makes alterations to a building to provide additional rooms or spaces for retail, handicraft or industrial activities?

Notes: Municipalities may waive building permit requirements in certain cases, or enact more extensive local requirements. [\[Planning and Building Act, SFS 2010:900, Chapter 9, Section 7\]](#)

In areas subject to local regulations, to the extent that the municipality has requirements in the area subject to the regulations, a permit is not required for activities relating to a complementary structure, that make only a small addition (not defined), or that modify or make additions to an industrial building. However, activities involving complementary buildings or small additions may require the consent of impacted neighbors if they are undertaken without a building permit, depending on the scale of construction activities. [\[Planning and Building Act, SFS 2010:900, Chapter 9, Section 7\]](#)

Preliminary decisions on what work may be undertaken at a location may be requested from the Municipal Building Committee. Such preliminary decisions are binding on the building permit review if a permit application is filed within two years of the date the preliminary decision is final. [\[Planning and Building Act, SFS 2010:900, Chapter 9, Sections 17 and 18\]](#)

17.2 If the facility is located in an area covered by a detailed development plan, did it obtain a building permit before repainting buildings, replacing facing or roofing material, or making other alterations which changed a building's external appearance? [\[Planning and Building Act, SFS 2010:900, Chapter 9, Section 2\(3\)\(c\) and Section 3\]](#)

17.3 Does the facility have a demolition permit for a project in the following circumstances: [\[Planning and Building Act, SFS 2010:900, Chapter 9, Section 10\]](#)

- A building located in an area covered by a detailed development plan, where the plan does not specify otherwise; and
- A building outside of an area covered by a detailed development plan where other regulations require a permit for demolition?

Notes: A demolition permit is not required for the demolition of buildings or parts of buildings which may be erected without a building permit (see Question [17.1](#) and Question [17.2](#) for projects requiring permits), unless specifically required by the municipality. [\[Planning and Building Act, SFS 2010:900, Chapter 9, Section 10\]](#)

17.4 Unless the detailed development plan contains provisions to the contrary, does the facility obtain a site improvement permit for excavation and filling of sites which may cause a substantial change in the height of any site or any land used for public space? [\[Planning and Building Act, SFS 2010:900, Chapter 9, Section 11\]](#)

Notes: If a certain level of ground is indicated by the plan, a site improvement permit is not required for raising or lowering the ground surface to that level after demolition. [\[Planning and Building Act, SFS 2010:900, Chapter 9, Section 11\]](#)

17.5 Did the facility notify the Municipal Building Committee in advance of construction, demolition or site work which does not require a permit but which does require notification according to the regulations issued under the [Planning and Building Act, SFS 2010:900, Chapter 16, Section 8?](#) [\[Planning and Building Act, SFS 2010:900, Chapter 9, Section 16\]](#)

Notes: No specific regulations have been issued as of the date of this protocol; however see the requirements under the [Building and Civil Engineering Work, AFS 1999:3](#), as covered in the Subsection entitled, "Building and Civil Engineering Work - General Requirements" for notification requirements under those regulations.

17.6 Do construction or demolition notifications specify the following: [\[Planning and Building Ordinance, SFS 1987:383, Section 15a\]](#)

- Address where the building or demolition works are intended to take place;
- Name and address of the construction client; and
- Date on which the building or demolition works are planned to commence?

17.7 Did the builder receive a start notification (*startbesked*) from the Municipal Building Committee prior to beginning any construction work for the following: [\[Planning and Building Act, SFS 2010:900, Chapter 10, Section 3\]](#)

- Work requiring a building, demolition or site improvement permit; or
- Work requiring a notification according to regulations issued under the [\[Planning and Building Act, SFS 2010:900\]](#)?

Notes: No part of any work subject to a permit or notification may begin prior to receiving a start notification from the Municipal Building Committee, unless specifically approved by the Municipal Building Committee. [\[Planning and Building Act, SFS 2010:900, Chapter 10, Section 4\]](#)

The start notification ceases to be valid for a permitted project on the day the permit expires. A new technical consultation or final consultation may be required for projects whose permit expires. [\[Planning and Building Act, SFS 2010:900, Chapter 10, Section 25\]](#)

The building start notification for construction that must be notified ceases to be valid if work has not begun within two years of the date of the start notification. A new technical consultation or final consultation may be required. [\[Planning and Building Act, SFS 2010:900, Chapter 10, Section 25\]](#)

17.8 Does the construction client ensure that work is conducted according to the control plan submitted for permitted and notified projects? [\[Planning and Building Act, SFS 2010:900, Chapter 10, Section 5\]](#)

Notes: The control plan includes the following: [\[Planning and Building Act, SFS 2010:900, Chapter 10, Section 6\]](#)

- The controls and inspections to be conducted and what will be inspected or subject to control;
- Who will perform inspections;
- What notifications will be submitted to the Municipal Building Committee;
- When site visits will be conducted by the Municipal Building Committee and what will be inspected;

- What hazardous waste is expected to be generated by demolition activities; and
- How hazardous waste will be handled.

The control plan will specify the level of inspections to be performed, both the construction client's own documented self-inspections, and inspections performed by independent inspectors accredited by an entity approved under the *Act on Technical Control, SFS 1992:1119*, or by another entity within the European Economic Area or the European Union. [\[Planning and Building Act, SFS 2010:900, Chapter 10, Section 8\]](#)

A control plan is not necessarily required for notified projects. [\[Planning and Building Act, SFS 2010:900, Chapter 10, Section 10\]](#)

17.9 Do all persons who perform inspections according to the control plan meet the following requirements: [\[Planning and Building Act, SFS 2010:900, Chapter 10, Section 9\]](#)

- Have the knowledge, experience and suitability required, as demonstrated by having a certification for such activities; and
- Are independent from those who are being inspected?

17.10 Does the construction client coordinate the activities of inspectors when there are multiple inspectors? [\[Planning and Building Act, SFS 2010:900, Chapter 10, Section 9\]](#)

17.11 If a construction inspector does not perform their duty, does the construction client immediately notify the Municipal Building Council of this fact, and if a construction inspector is no longer available, does the construction client appoint a new construction inspector? [\[Planning and Building Act, SFS 2010:900, Chapter 10, Sections 12 and 13\]](#)

17.12 If insurance is required for the construction, has the facility provided proof of insurance to the Municipal Building Committee? [\[Planning and Building Act, SFS 2010:900, Chapter 10, Section 16\]](#)

17.13 If a building project required a technical consultation, did the facility receive final clearance at the completion of the project? [\[Planning and Building Act, SFS 2010:900, Chapter 10, Section 30\]](#)

17.14 Does the facility ensure that the person(s) appointed to be responsible for quality matters have suitable education and experience for the duty? [\[Planning and Building Ordinance, SFS 1987:383, Section 17\]](#)

Notes: The person(s) responsible must be approved by the Municipal Building Committee or by a body accredited under the *Act on Technical Control, SFS 1992:1119*. [[Planning and Building Ordinance, SFS 1987:383, Section 13](#)]

II. Construction Work Safety and Coordination

17.15 If the facility commissions construction or heavy engineering work, does it ensure that safety and health are taken into consideration at every stage of the planning and design, both during the construction stage and considering future use? [[Work Environment Act, SFS 1977:1160, Chapter 3, Section 6](#)]

17.16 If building or construction work is undertaken at the facility, has the facility appointed a Construction Work Environment Coordinator? [[Work Environment Act, SFS 1977:1160, Chapter 3, Section 6](#)]

Notes: If the facility appoints an agent or employee to conduct site safety and health coordination, as the entity commissioning the activity, it is not relieved of the responsibility to ensure coordination of health and safety matters. If an engineering firm has been engaged, the contract may specify the responsibility to coordinate health and safety. If responsibility is not specified in the contract, the entity commissioning the project is responsible. [[Work Environment Act, SFS 1977:1160, Chapter 3, Section 7c](#)]

The Construction Work Environment Coordinator is responsible for coordinating the implementation of work safety regulations at every stage of planning and design and for ensuring compliance with the work safety rules both during construction and during operations in the building or facility. This is especially necessary when there are questions regarding the planning of operations to be performed simultaneously or consecutively. The Construction Work Environment Coordinator should consider the safety and health coordinator's work plan and other required documentation. [[Work Environment Act, SFS 1977:1160, Chapter 3, Section 7a](#)]

The Construction Work Environment Coordinator is responsible for ensuring coordination of efforts to prevent risks to health and accidents at the site, and for ensuring that the following requirements are met: [[Work Environment Act, SFS 1977:1160, Chapter 3, Section 7b](#)]

- The application of relevant work safety regulations regarding technical or organizational issues is coordinated to plan the order of work operations;
- Work safety rules are implemented in a systematic way, as specified in a work plan;

- Coordination measures are in place to verify that construction or installation work is carried out properly;
- Only authorized persons have access to the site; and
- The requirements of the [Work Environment Act, SFS 1977:116](#), Chapter 3, Section 7g (see Section 10.0 of this protocol, the Subsection entitled, “General Requirements”) are met for coordinating activities among those who operate on a common site.

Other employers working at the common worksite must comply with the directions issued by the Construction Work Environment Coordinator. [Work Environment Act, SFS 1977:1160, Chapter 3, Section 6](#)

Where construction activities are taking place in a joint workplace with an appointed coordinator for safety and health (see Section 10.0 of this protocol), the work coordinator for safety and health and the Construction Work Environment Coordinator must coordinate to ensure safety and health for both ongoing non-construction work and construction activities. [Work Environment Act, SFS 1977:1160, Chapter 3, Section 7f](#)

III. General Requirements for Construction Works

- 17.17** Does the facility ensure that building, demolition or earthwork sites are arranged so that the entry of unauthorized persons is prevented and the risk of injury to persons is limited? [Building Regulations, BFS 1993:57, Section 2:3](#)
- 17.18** Are measures taken to protect against the outbreak and spread of fire and against the emission of noise and dust? [Building Regulations, BFS 1993:57, Section 2:3](#)
- 17.19** If a building or part of a building is used or put into service when building or demolition work is in progress, are necessary measures taken to protect the occupants and users against injuries, and, if regular escape routes cannot be used, are temporary ones provided? [Building Regulations, BFS 1993:57, Section 2:3](#)
- 17.20** Are any alterations to or relocation of a building made with care and with regard to the building's: [Planning and Building Act, SFS 2010:900, Chapter 8, Section 17](#)
- Characteristic features;
 - Technical features;

- Historical, cultural and artistic value; and
- Effects on the environment?

Notes: This requirement also applies to modifications and alterations of signboards and lighting fixtures, and other equipment whose size or function affects its surroundings such that it requires a building permit according to local regulations issued under the authority of Chapter 16, Section 7 of the [Planning and Building Act, SFS 2010:900](#). [\[Planning and Building Act, SFS 2010:900, Chapter 8, Section 17\]](#)

17.21 Is construction work conducted and are construction sites maintained so that: [\[Planning and Building Act, SFS 2010:900, Chapter 8, Sections 14 and 15\]](#)

- The design and technical features are preserved;
- The risk of accidents is limited; and
- Inconvenience to the surroundings and traffic is prevented?

Notes: This applies also, so far as is reasonable, to nearby areas and adjacent public places. [\[Planning and Building Act, SFS 2010:900, Chapter 8, Section 16\]](#)

17.22 If a building to be demolished is infested with vermin or wood-destroying insects, are these vermin and insects exterminated? [\[Planning and Building Ordinance, SFS 1987:383, Section 20\]](#)

17.23 Are materials capable of causing adverse effects to humans, flora or fauna handled in a safe manner during demolition? [\[Planning and Building Ordinance, SFS 1987:383, Section 20\]](#)

Notes: The term “safe manner” is not defined in the Ordinance.

IV. Technical Requirements for Construction Works

17.24 Does the facility ensure that constructions are built, altered and maintained to comply with essential technical requirements concerning the following: [\[Planning and Building Act, Chapter 8, Section 4\]](#)

- Load bearing capacity, stability and durability;
- Safety in case of fire;

- Precautions with regard to health, hygiene and environment;
- Safety in use;
- Protection against noise;
- Energy economy and thermal insulation;
- Suitability for intended purpose;
- Accessibility and fitness for use with regard to persons with limited mobility or orientation capacity; and
- Economical management of waste and water?

17.25 Are lifts in buildings equipped to reasonably fulfill the technical requirements described in Question [17.24](#)? [[Planning and Building Act, SFS 2010:900, Chapter 8, Section 24](#)]

17.26 Are construction works designed and built in such a way that the impacts likely to occur during the period of building and use will not lead to any of the following: [[Ordinance on Technical Requirements for Construction Works, Etc., SFS 1994:1215, Section 3](#)]

- Collapse of all or part of the structure;
- Major deformations to an unacceptable degree;
- Damage to other parts of the construction or to installations or equipment as a result of major deformation of the load-bearing construction; or
- Damage to an extent disproportionate to the cause of action?

17.27 Are construction works built in such a way that, in the event of an outbreak of fire, the following requirements are met: [[Ordinance on Technical Requirements for Construction Works, Etc., SFS 1994:1215, Section 4](#)]

- The load-bearing capacity of the construction can be assumed to hold for a known period of time;
- The generation and spread of fire and smoke within the construction are limited;
- The spread of fire to neighboring construction works is limited;

- People inside the construction works are able to leave or to be rescued by other means; and
- The safety of rescue teams is taken into consideration?

17.28 Are construction works designed and built in such a way that they will not present an unacceptable risk to the hygiene or health of users or neighbors, and in particular, are the following factors taken into account: [[Ordinance on Technical Requirements for Construction Works, Etc., SFS 1994:1215, Section 5](#)]

- The emission of toxic gases;
- The presence of dangerous particles or gases in the air;
- The emission of dangerous radiation;
- Pollution or poisoning of the soil or water;
- Poor disposal of waste water, smoke, or solid or liquid waste; and
- The presence of dampness?

17.29 Are construction works designed and built in such a way that the following requirements are met: [[Ordinance on Technical Requirements for Construction Works, Etc., SFS 1994:1215, Sections 6 through 8](#)]

- Unacceptable risks of accidents in service or in operation, such as slipping, falling, collision, burns, electrocution and injury from explosion are prevented;
- Noise perceived by users or other people near the construction works is kept to a level that will not present an unacceptable risk to their health and will allow them to sleep, rest and work in satisfactory conditions; and
- Heating, cooling, and ventilation installations are built in such a way that the energy required for use is low, having regard to the climatic conditions of the location and the occupants?

- 17.30** Are all building products used in construction suitable for the intended purpose and use? [\[Planning and Building Act, SFS 2010:900, Chapter 8, Section 19\]](#)

Notes: "Building product" means any product which is intended for incorporation in a permanent manner in construction works. [\[Planning and Building Act, SFS 2010:900, Section 4\]](#)

A building product is considered suitable for use in construction works if it bears a CE marking. To obtain a CE marking, a construction product must conform to a national or international standard which implements the relevant harmonized standard for construction products. [\[Planning and Building Act, SFS 2010:900, Chapter 8, Section 19\]](#) and [\[Ordinance on Technical Requirements for Construction Works, Etc., SFS 1994:1215, Sections 20 and 21\]](#)

- 17.31** Is the heating system of a building designed to meet the following requirements: [\[Ordinance on Technical Requirements for Construction Works, Etc., SFS 1994:1215, Sections 10, 12 and 13\]](#)

- Allows for alternate sources of energy without extensive alterations, to the extent that this is reasonable in consideration of the heating method and the source of energy supply;

Notes: This requirement does not apply to temporary workplaces or to structures with an area of less than 50 square meters. [\[Ordinance on Technical Requirements for Construction Works, Etc., SFS 1994:1215, Section 10\]](#)

- Is accessible to, and useable by, people with limited mobility or orientation capacity;
- Is fitted with lifts or other lifting appliances to the extent needed to meet the requirement of the previous bullet; and
- Allows good economy in the use of water?

- 17.32** If special provisions established by the supervisory authority require inspections of the performance of ventilating systems to ensure a satisfactory indoor climate, does the facility appoint a performance inspector to carry out the inspection? [\[Planning and Building Act, SFS 2010:900, Section 25\]](#)

Notes: The performance inspector must hold a national authorization from a body accredited for this purpose under the *Act on Technical Control, SFS 1992:1119*, or be approved for specific inspections by the Municipal Building Committee. [\[Planning and Building Act, SFS 2010:900, Section 25\]](#)

V. Building and Civil Engineering Work - General Requirements

Notes: The requirements of this subsection, and the following subsections related to building and civil engineering work, apply to the following: [[*Building and Civil Engineering Work, AFS 1999:3, Section 1*](#)]

- Planning and construction of civil engineering work;
- Project preparation and design of building or civil engineering work, in so far as this affects health and safety conditions for the workers;
- Modifications, renovations and repairs;
- Demolition and dismantling;
- Maintenance, including painting and cleaning; and
- Drainage and sanitary work.

The requirements do not apply to other work premises used in connection with the construction work, such as maintenance areas or machine rooms, nor do they apply to the ventilation of such premises. Such areas are covered by the [*Work Environment Act, SFS 1977:1160*](#), and its Ordinance, and by the *Systematic Work Environment Management, AFS 2001:1*. [[*Building and Civil Engineering Work, AFS 1999:3, Section 1b and Commentary on Section 1*](#)] See Section 10.0 of this protocol for such requirements which apply to general work sites.

Sections 19, 21, 31, 45, 48, 71 and 85 of [*Building and Civil Engineering Work, AFS 1999:3*](#) apply also to winter road maintenance. Sections 19, 48, 60, 87 and 89 apply to snow removal from roofs in connection with construction sites. [[*Building and Civil Engineering Work, AFS 1999:3, Section 1a*](#)]

The requirements of Sections 5 through 5b apply, as appropriate, to those responsible for design rather than execution of a project. [[*Building and Civil Engineering Work, AFS 1999:3, Section 10*](#)]

[*Building and Civil Engineering Work, AFS 1999:3*](#) has been revised to align more closely with the requirements of the [*Work Environment Act, SFS 1977:1160*](#), and the *Work Environment Ordinance, SFS 1977:1166*. Responsibility for fulfilling the requirements of [*Building and Civil Engineering Work, AFS 1999:3*](#) are as specified in the [*Work Environment Act, SFS 1977:1160*](#), including coordination, planning, conduct of the work, safety and health. [[*Building and Civil Engineering Work, AFS 1999:3, Section 4*](#)] Definitions of the terms “Construction Work Environment Coordinator” and “contractor” defer to definitions in the [*Work Environment Act, SFS 1977:1160*](#). [[*Building and Civil Engineering Work, AFS 1999:3, Section 3*](#)] Requirements in Sections 7, 8, 9, 12 through 12b, and Section 14 (paragraphs 2 through 4) are considered to be regulations pursuant to Chapter 4, Section 8 of the [*Work Environment Act, SFS 1977:1160*](#), and violations will lead to penalties under that Act. [[*Building and Civil Engineering Work, AFS 1999:3, Section 101*](#)]

Fulfillment of the requirements in Sections 5 through 9 of [Building and Civil Engineering Work, AFS 1999:3](#) may be the responsibility of a contractor (*uppdragstagare*) rather than the construction client (*byggherre*). [\[Building and Civil Engineering Work, AFS 1999:3, Section 4a\]](#)

17.33 During the preparation and design of the project, does the facility take particular account of safety and health conditions during the construction stage, with particular attention paid to the following: [\[Building and Civil Engineering Work, AFS 1999:3, Section 5\]](#)

- Positioning and design of the object or structure;
- Choice of building products;
- Choice of structures for foundation, framework systems or other load-bearing elements;
- Choice and design of structure completion;
- Choice of installations and their positioning; and
- Choice of interior fittings?

17.34 At every stage of planning and design, does the facility ensure that the following requirements are met regarding the working environment: [\[Building and Civil Engineering Work, AFS 1999:3, Section 5a\]](#)

- The time allowed for construction and for different phases of construction is sufficient to ensure that work proceeds at a pace that avoids the risk of illness and accidents;
- Transport of construction materials, demolition materials and equipment occurs in an acceptable way for work site safety and health; and
- The area of activity is large enough so that offices, staff facilities, etc., required for all activities at the workplace will not become too crowded?

17.35 Is building and construction work planned and designed in a timely manner before the execution of the work so that it is possible to coordinate the work and to avoid risks to occupational safety and health arising from lack of sufficient coordination time? [\[Building and Civil Engineering Work, AFS 1999:3, Section 5b\]](#)

- 17.36** Before undertaking building or construction work, are the following requirements met: [Building and Civil Engineering Work, AFS 1999:3, Section 5b]
- Before demolition, reconstruction or renovation of an object or part of an object, the health risks associated with hazardous materials and risks associated with the stability of the item are assessed;
 - The presence of materials hazardous to health is assessed before demolition begins and the presence of such materials is verified; and
 - If knowledge of the hazards of materials is not known by other means, sampling and, if necessary, analysis of the materials is performed?
- 17.37** Is prior notification of construction work submitted to the Swedish Work Environment Authority in accordance with Table 17-1 if the construction site meets either of the following requirements: [Building and Civil Engineering Work, AFS 1999:3, Section 7]
- Work is scheduled to last longer than 30 working days and more than 20 persons are occupied simultaneously at any one time; or
 - The volume of work is expected to exceed 500 person-days?
- 17.38** Is a copy of the prior notification to the Work Environment Authority displayed clearly at the workplace and updated regularly? [Building and Civil Engineering Work, AFS 1999:3, Section 7] <RECORD KEEPING>
- 17.39** Does the facility ensure that a work environment plan is drafted and available before the construction site is set up, if either of the following conditions is met: [Building and Civil Engineering Work, AFS 1999:3, Sections 8 and 12]
- Any of the particular work activities indicated in Question 17.40, third bullet, is carried out in connection with the building or engineering work; or
 - The work requires prior notification (see Question 17.37)?
- 17.40** Does the work environment plan include the following information: [Building and Civil Engineering Work, AFS 1999:3, Section 12a]
- Rules to be applied on the construction site;
 - Description of how health and safety work will be organized; and

- A description of the special measures to be taken during the project execution stage in order to satisfy health and safety conditions to meet the requirements of the *Work Environment Act, SFS 1977:1160* and its regulations, together with other regulations of the Work Environment Authority or the former National Occupational Health and Safety Board issued under the *Work Environment Ordinance, SFS 1977:1166*, which are applicable if the facility conducts any of the following:
 - Work entailing a risk of falls to lower levels, if the difference in level is 2 meters or more;
 - Work entailing a risk of burial under landslides or engulfment in loose soil;
 - Work with chemical or biological substances constituting a particular danger to safety and health or involving a legal requirement (according to the Work Environment Authority or prior National Occupational Safety and Health Board) for medical surveillance (see Section 15.0 of this protocol);
 - Work which exposes workers to ionizing radiation requiring the designation of controlled or supervised areas, according to *SSI FS 1998:3* (now replaced by the *Regulations on Basic Requirements for Protection of Workers and the Public Regarding Workplaces with Ionizing Radiation, SSMFS 2008:51*, see Section 15.0 of this protocol);
 - Work near high voltage power lines;
 - Work entailing a risk of drowning;
 - Work involving the use of explosive substances;
 - Work involving the introduction, assembly and dismantling of heavy prefabricated components or heavy shuttering elements;
 - Work in a place or area with passing vehicular traffic (see the Subsection entitled, “Building and Civil Engineering Work - Passing Vehicular Traffic” for more details); and/or
 - Demolition of load-bearing structures or health-endangering materials or substances?

Notes: Additional work requiring special measures includes work involving wells, tunnels, underground and underwater work, and work in caissons and compressed air. These types of work are beyond the scope of this protocol.

If the work is conducted in a workplace where other entities conduct operations at the same time, the plan must address these additional operations. [[Building and Civil Engineering Work, AFS 1999:3, Section 12a](#)]

17.41 Does the facility ensure that appropriate modifications are made to the work site safety and health plan, taking into account the progress of the work at the site and any changes to the work? [[Building and Civil Engineering Work, AFS 1999:3, Section 8](#)]

17.42 Does the facility ensure that a site file is compiled that meets the following requirements: [[Building and Civil Engineering Work, AFS 1999:3, Section 9](#)] **<RECORD KEEPING>**

- Contains the information specified in Section 12(b) (see Question [17.44](#));
- Is updated to document all changes to the project as necessary, according to the progress of work and any changes occurring during execution of the project; and
- Is maintained for as long as the constructed object remains in existence, and is transferred to any new owner of the construction object?

17.43 Is a Construction Work Environment Coordinator appointed to attend to matters of safety and health and to coordinate during the preparation and design of the project, and does that person have knowledge of building and civil engineering work and competence related to safety and health matters? [[Building and Civil Engineering Work, AFS 1999:3, Section 5b and 6](#)]

Notes: The Construction Work Environment Coordinator may be either: [[Building and Civil Engineering Work, AFS 1999:3, Section 6](#)]

- A legal entity whose staff have the qualifications to be a Construction Work Environment Coordinator under the [Work Environment Act, SFS 1977:1160](#); or
- A person who either personally has, or has access to, people who have the skills to be a Construction Work Environment Coordinator under the [Work Environment Act, SFS 1977:1160](#).

The Construction Work Environment Coordinator is responsible for participating in and coordinating planning and execution of the project, and for ensuring that those planning and executing the project take account of all the various possibilities and solutions. They are also responsible for preventing risks of illness and accident during the execution of the project. Coordination must ensure that work on the different areas and phases of construction, installations, etc., do not interfere on each other, either in time or space, such that a risk of illness or accident could occur. [[*Building and Civil Engineering Work, AFS 1999:3, Section 11*](#)]

The new certification/training requirements for Construction Work Environment Coordinators, required under the 2009 amendments to [*Building and Civil Engineering Work, AFS 1999:3*](#), must be implemented as of 1 January 2011. However, if a large number of people must be trained, the requirement may be met at the latest within two years. This does not affect the general requirements under the [*Work Environment Act, SFS 1977:1160*](#), Chapter 3, Section 6, requiring good planning for both construction activities and future use, and the requirement to appoint construction work coordinators. [[*Building and Civil Engineering Work, AFS 1999:3, Entry into Force \(Ikraftträdande\)*](#)]

The Construction Work Environment Coordinator must ensure that anyone in a coordinator role has the appropriate qualifications. [[*Building and Civil Engineering Work, AFS 1999:3, Section 6*](#)]

17.44 Does the Construction Work Environment Coordinator maintain documentation regarding construction activities until the construction work is completed, including the following: [[*Building and Civil Engineering Work, AFS 1999:3, Section 12b*](#)] **<RECORD KEEPING>**

- A description of the construction object, including design and building products used; and
- All necessary information relating to safety and health during the construction work and for use of the construction object when brought into service, and relating to maintenance, repair, modification and demolition of the construction object?

17.45 Does the Construction Work Environment Coordinator meet the following requirements: [[*Building and Civil Engineering Work, AFS 1999:3, Sections 13 through 16*](#)]

- Participates in planning of work and ensures that common work environment items are taken into account when work methods and work equipment are used, where different works are planned and undertaken simultaneously;

- Organizes safety protection at the workplace, including organizing joint safety protection if several works are undertaken at the same work site;
- Ensures that the work environment plan requirements in Sections 8, 12 and 12a (see Question [17.39](#) and Question [17.40](#)) are implemented appropriately as soon as the construction site is established;
- Updates the work environment plan as the work progresses, noting any changes that must be made to the work, the actual changes made to work methods used, and the appropriate conditions for undertaking the work;
- Updates the written documentation of how the work relating to the work environment is organized;
- Updates all written documentation with the significant changes and changes to conditions that are necessary to be made to the work environment;
- Has oversight of inspections, and ensures that technical devices are subjected to the required inspections and tests, and that users of such devices have sufficient competence and, if appropriate, the necessary permit; and
- If the Construction Work Environment Coordinator or his/her representative is not able to be present at the work site, ensures that information indicating a secondary contact person, or several if necessary, is available, and that there is always information on how to reach someone at all times that work is being conducted?

VI. Building and Civil Engineering Work - Safety Measures

Notes: See the notes at the beginning of the Subsection entitled, “Building and Civil Engineering Work - General Requirements” for information about the applicability of this subsection.

17.46 Do the persons conducting activities at worksites comply with the following requirements:
[\[Building and Civil Engineering Work, AFS 1999:3, Sections 17 and 18\]](#)

- Furnish the Construction Work Environment Coordinator with particulars of the special risks that may be caused by the activity;
- Comply with the rules of order and safety issued by the Construction Work Environment Coordinator;

- Take part in the management of the working environment;
- Help to maintain good order and to ensure that the construction site is not unnecessarily encumbered with materials, equipment, packaging, refuse, etc.; and
- Clean the site periodically?

17.47 When planning for building or construction work, are all factors relevant to the work considered, and are risks of illness and accidents at work assessed as early as possible, with special attention to the following: [\[Building and Civil Engineering Work, AFS 1999:3, Section 19\]](#)

- The risk of ignition and the spread of fire; and
- Access and the arrangement of access points and roads?

17.48 Are storage areas, warehouses, workshops and staff facilities located so that activities can be carried out safely? [\[Building and Civil Engineering Work, AFS 1999:3, Section 20\]](#)

17.49 Do workers have access to drinking water in the vicinity of their workstations? [\[Building and Civil Engineering Work, AFS 1999:3, Section 20\]](#)

17.50 When choosing the location of workstations, are access and communication routes taken into consideration? [\[Building and Civil Engineering Work, AFS 1999:3, Section 21\]](#)

17.51 If work is carried out near water or a high-voltage power installation, is protection provided against the special risks this can entail? [\[Building and Civil Engineering Work, AFS 1999:3, Section 22\]](#)

Notes: If possible, existing overhead electric power lines which may constitute a risk to health and safety must be redirected away from the construction site, or the current must be cut off. If this is not possible, barriers and notices must be put up to ensure that equipment and vehicles are kept at distances that ensure that overhead electric power lines do not endanger health and safety. [\[Building and Civil Engineering Work, AFS 1999:3, Section 22\]](#)

17.52 Is any place or area where building or civil engineering work is carried on demarcated in a way that is clearly visible and identifiable (e.g., signs are erected in suitable locations around the construction site and in its vicinity)? [\[Building and Civil Engineering Work, AFS 1999:3, Section 23\]](#)

- 17.53** Before building or civil engineering work begins, is an investigation made to ascertain whether there are installations, cables, or other distribution systems in the ground or in existing parts of the building or structure which may be affected by the work, and are such systems clearly marked so that the risks associated with them are reduced to a minimum? [[*Building and Civil Engineering Work, AFS 1999:3, Section 24*](#)]
- 17.54** Is any installation for electricity, water, gas, etc. constructed so that it may be used safely throughout the project execution stage, and are such installations designed and located so that they are protected from inadvertent influence? [[*Building and Civil Engineering Work, AFS 1999:3, Section 25*](#)]
- 17.55** Is sufficient space provided, to the extent necessary, for the reception, storage and safe keeping of building products and other materials used in the work, and is any area used for the storage of dangerous substances demarcated and laid out in such a way that the health hazards and accident risks are averted? [[*Building and Civil Engineering Work, AFS 1999:3, Section 26*](#)]
- Notes: Areas and surfaces for reception and storage must have sufficient load-bearing capacity and stability to avoid a risk of collapse. [[*Building and Civil Engineering Work, AFS 1999:3, Section 26*](#)]
- 17.56** Is it possible for all workstations to be evacuated and for all employees to reach a safe area quickly and safely in the event of fire, escaping gas, or other emergencies? [[*Building and Civil Engineering Work, AFS 1999:3, Section 27*](#)]
- 17.57** Do escape routes meet the following requirements: [[*Building and Civil Engineering Work, AFS 1999:3, Section 28*](#)]
- Number, distribution and dimensions are adapted to the use, equipment and dimensions of the construction site, spaces and work premises, and to the maximum number of persons who may be present;
 - Routes are marked with signs that are sufficiently durable and placed at appropriate points; and
 - Routes requiring illumination are provided with emergency lighting of adequate intensity in the event that normal lighting fails (see Question [17.78](#))?
- 17.58** Are escape routes and communication routes, as well as the doors leading to them, free from obstructions so that they may be used at any time without inconvenience? [[*Building and Civil Engineering Work, AFS 1999:3, Section 29*](#)]

17.59 Do doors for evacuation routes meet the following requirements: [[*Building and Civil Engineering Work, AFS 1999:3, Section 30*](#)]

- Open outwards in the evacuation direction;
- Are not locked/fastened;
- Can be immediately and easily opened by any person in the event of an emergency;
- Are appropriately marked; and
- Sliding or revolving doors are not used?

17.60 Are the following first aid requirements met: [[*Building and Civil Engineering Work, AFS 1999:3, Section 31*](#)]

- First aid is available;
- Staff trained to provide first aid are available at all times;
- Areas or places for first aid are provided to the extent appropriate to the nature and scale of the activity;
- Equipment and areas or places for first aid are identified by signs; and
- Addresses and telephone numbers of ambulance and rescue services are clearly displayed?

17.61 Is fire-fighting equipment and, where necessary, are fire detectors and alarm systems provided to prevent the occurrence and spread of fire, and are their number and design adapted to conform to the following factors: [[*Building and Civil Engineering Work, AFS 1999:3, Section 32*](#)]

- Conditions where the building or civil engineering work is carried out;
- Size and use of the spaces;
- Equipment used;

- Physical and chemical properties of the building products and the substances present;
- Maximum potential number of people present in the spaces and work premises and on the construction site; and
- The performance of appropriate tests and drills that are conducted at regular intervals?

17.62 Does non-automatic fire-fighting equipment meet the following requirements: [Building and Civil Engineering Work, AFS 1999:3, Section 33](#)

- Simple to use;
- Easily accessible; and
- Indicated by signs?

Notes: See Section 13.0 of this protocol for general fire safety information.

17.63 Are sliding doors fitted with a safety device to prevent them from being derailed or falling over, and are doors and gates opening upwards fitted with a mechanism to secure them against falling back down? [Building and Civil Engineering Work, AFS 1999:3, Section 34](#)

17.64 Do mechanical doors and gates meet the following requirements: [Building and Civil Engineering Work, AFS 1999:3, Section 35](#)

- Operate without any risk of accident to the employees;
- Are fitted with emergency stop devices which are easily identifiable and accessible; and
- Unless they open automatically in the event of a power cut, can be opened manually?

17.65 Are doors for pedestrian traffic provided in the immediate vicinity of gates intended for vehicle traffic, unless it is safe for pedestrians to use the gates, and are such doors clearly marked and kept free from obstructions at all times? [Building and Civil Engineering Work, AFS 1999:3, Section 35](#)

- 17.66** Are windows, skylights, ventilators and smoke hatches possible to open, close, adjust and secure in a safe manner, and does the facility ensure that, when opened or unlocked, these units do not constitute a hazard to employees? [[*Building and Civil Engineering Work, AFS 1999:3, Section 36*](#)]
- 17.67** Are windows and skylights designed for equipment or otherwise fitted with devices which allow them to be cleaned without risk to the person conducting the cleaning or to other employees? [[*Building and Civil Engineering Work, AFS 1999:3, Section 36*](#)]
- 17.68** Are walls of glass or other transparent/translucent materials in the vicinity of workplaces or of access or communication routes clearly indicated and made of shatter-proof materials or shielded to prevent employees from coming into contact with them or being injured if the walls shatter? [[*Building and Civil Engineering Work, AFS 1999:3, Section 37*](#)]
- 17.69** Are construction sites equipped with safe communication routes, loading bays, loading towers and load openings which meet the following requirements: [[*Building and Civil Engineering Work, AFS 1999:3, Section 38*](#)]
- Have protective devices and are designed, proportioned and located to avoid a risk of falls and falling objects;
 - Communication routes are clearly marked if necessary for the safety of employees, depending on the equipment on the site and other conditions;
 - Loading bays have at least one exit point; and
 - Loading towers have a gate or barrier which can be easily and safely opened and closed in connection with transport operations?
- 17.70** Do communication routes to a higher or lower level consist of stairs or a ramp? [[*Building and Civil Engineering Work, AFS 1999:3, Section 39*](#)]
- Notes: If the difference between two levels exceeds 10 meters and this involves a great deal of stair-climbing for employees, a lift must be provided in addition to the stairs. [[*Building and Civil Engineering Work, AFS 1999:3, Section 39*](#)]
- 17.71** Do stairs have sufficient width and do they have a suitable gradient? [[*Building and Civil Engineering Work, AFS 1999:3, Section 39*](#)]

Notes: “Sufficient” and “suitable” are determined in relation to the facility’s risk assessment.

- 17.72** If needed due to the height of the stairs, are landings provided at suitable distances? [\[Building and Civil Engineering Work, AFS 1999:3, Section 39\]](#)

Notes: "Suitable" is determined in relation to the facility's risk assessment.

- 17.73** Are handrails and guardrails provided on stairs and landings? [\[Building and Civil Engineering Work, AFS 1999:3, Section 39\]](#)

- 17.74** Does any permanently fixed ladder which is vertical or near-vertical and more than 6 meters in length have cage protection down to a height of approximately 2.5 meters above the ground or another level? [\[Building and Civil Engineering Work, AFS 1999:3, Section 39\]](#)

- 17.75** Are transport routes intended for motor vehicles designed with due regard to traffic safety, and are they provided with adequate safety clearance or other protective devices? [\[Building and Civil Engineering Work, AFS 1999:3, Section 40\]](#)

- 17.76** Is sufficient clearance allowed between vehicle traffic routes and doors, gates, passages for pedestrians, corridors and staircases? [\[Building and Civil Engineering Work, AFS 1999:3, Section 41\]](#)

- 17.77** Are workstations and other spaces, as well as transport and access routes, arranged, as far as possible, to receive adequate daylight? [\[Building and Civil Engineering Work, AFS 1999:3, Section 42\]](#)

Notes: If needed under the conditions at the construction site, artificial, movable, impact-proof, and/or standby lighting must be provided. [\[Building and Civil Engineering Work, AFS 1999:3, Section 42\]](#)

- 17.78** Are spaces, workstations and communication and access routes where employees are especially exposed to risks in the event of power cuts provided with emergency lighting of adequate intensity? [\[Building and Civil Engineering Work, AFS 1999:3, Section 43\]](#)

Notes: The term "adequate" is not defined in the Regulation.

- 17.79** Are lighting installations of a type and positioning that does not entail a risk of accident to employees? [\[Building and Civil Engineering Work, AFS 1999:3, Section 44\]](#)

Notes: The color of artificial lighting must not alter or affect the perception of signals, signposts or safety/warning clothing. [\[Building and Civil Engineering Work, AFS 1999:3, Section 44\]](#)

- 17.80** Are working methods and equipment chosen as follows: [Building and Civil Engineering Work, AFS 1999:3, Section 45](#)
- To counteract accidents due to falls or collapses, overturning or falling objects;
 - To avoid physical loads which are dangerous to health or are unnecessarily fatiguing;
 - Are appropriate to the properties of the building products;
 - Entail low exposure to noise, vibration, dangerous substances and air contaminants; and
 - Are suitable for foundations and structural systems and for the completion of the structure (*stomkomplettering*, including interior walls, rough and finish carpentry), installations and interior fittings?
- 17.81** Is suitable equipment provided for lifting and conveying building products and other materials, if needed in order for the employees not to be subjected to loads which are dangerous to health or unnecessarily fatiguing? [Building and Civil Engineering Work, AFS 1999:3, Section 46](#)
- 17.82** Do lifting devices and accessories, including their component parts, attachments, anchorings and supports, fulfill the following requirements: [Building and Civil Engineering Work, AFS 1999:3, Section 46](#)
- Are properly designed and constructed and sufficiently strong for their intended use; and
 - Clearly display their maximum load values?
- 17.83** Are lifting devices and accessories operated by qualified workers who have received appropriate training, and does the facility ensure that the devices are not used for purposes other than those for which they were intended? [Building and Civil Engineering Work, AFS 1999:3, Section 46](#)
- 17.84** Does the facility ensure that equipment and devices (including hand-held tools) chosen are properly designed and in accordance with ergonomic principles, and that they are operated only by employees with adequate skills for the purposes for which they were intended? [Building and Civil Engineering Work, AFS 1999:3, Section 47](#)

Notes: See Section 15.0 of this protocol for more details on ergonomics.

- 17.85** Are shutterings and temporary supports designed, installed and maintained so that they safely withstand the loads or stresses to which they may be subjected? [[*Building and Civil Engineering Work, AFS 1999:3, Section 47*](#)]
- 17.86** Are vehicles powered by internal combustion engines, as well as machinery and other equipment, used in such a way as to not expose persons operating them or working near them to harmful concentrations of exhaust fumes? [[*Building and Civil Engineering Work, AFS 1999:3, Section 47*](#)]
- 17.87** Is the following information concerning the building or civil engineering work supplied to workers, in a comprehensible manner, as follows: [[*Building and Civil Engineering Work, AFS 1999:3, Section 48*](#)]
- The rules to be applied concerning health and safety measures taken or planned, to all workers; and
 - Information about the safe conduct of work, to workers to the extent necessary?
- 17.88** Are equipment and installations procured and used in the work activities inspected before use, and are they inspected and maintained periodically and after events which may affect their working order? [[*Building and Civil Engineering Work, AFS 1999:3, Section 49*](#)]

Notes: This requirement particularly applies to the following: [[*Building and Civil Engineering Work, AFS 1999:3, Section 49*](#)]

- Fire-fighting equipment;
- Energy distribution installations;
- Communication routes;
- Traffic control devices and cut-off devices;
- Shutterings and other temporary structures;
- Safety nets;
- Structures for workplaces at a height or depth; and
- Signage, markings and other safety and/or health signs.

17.89 If the inspections described in Question [17.88](#) reveal deficiencies which pose a serious danger to safety or health, does the facility suspend work immediately until the deficiencies have been corrected? [[Building and Civil Engineering Work, AFS 1999:3, Section 50](#)]

17.90 Does the facility ensure that launching, assembly or dismantling of heavy prefabricated elements or heavy building components is only commenced and carried out under the direction of a competent person? [[Building and Civil Engineering Work, AFS 1999:3, Section 51](#)]

Notes: The term “competent person” is not defined in the Regulation.

17.91 Are projecting or upward-pointing building parts or sharp or pointed objects removed or shielded if necessary to avoid accidents? [[Building and Civil Engineering Work, AFS 1999:3, Section 52](#)]

17.92 Is the transport of building products or other materials planned and conducted in such a way that injuries or accidents are prevented? [[Building and Civil Engineering Work, AFS 1999:3, Section 53](#)]

17.93 Is transport up to or down from a level more than 2 meters above the ground level or the working level conducted in such a way that a guardrail or other protective device does not need to be removed, or by one of the following methods: [[Building and Civil Engineering Work, AFS 1999:3, Section 53](#)]

- Loading towers;
- Load openings in facades;
- Specially provided ramps; or
- Specially provided transport systems?

Notes: If, due to the shape or size of individual objects, the requirements of this question cannot be met and a guardrail or other protective device must be removed, the transport must be specially planned and supervised, and special safety precautions must be taken. The guardrail or other protective device must be put back as soon as it no longer impedes the transport operation and this, also, must be specially supervised. [[Building and Civil Engineering Work, AFS 1999:3, Section 53](#)]

- 17.94** Does the facility ensure that storage, handling and removal of building and demolition wastes takes place in a safe manner, and that special attention is paid to conditions when used dangerous materials, used dangerous substances, and packaging which contained dangerous substances are removed from the site or area? [[*Building and Civil Engineering Work, AFS 1999:3, Section 54*](#)]
- 17.95** Are building products, other materials, and equipment which may move in any way and which could cause occupational accidents or injuries stabilized in an appropriate and safe manner? [[*Building and Civil Engineering Work, AFS 1999:3, Section 55*](#)]
- 17.96** Are openings and holes in floors, roofs, etc. where there is a risk of falling or stepping through such areas provided with a guardrail or protective covering which meets the following requirements: [[*Building and Civil Engineering Work, AFS 1999:3, Section 59*](#)]
- Cannot be inadvertently disturbed;
 - Has sufficient load-bearing capacity; and
 - Its purpose is clearly evident or it is clearly marked?
- 17.97** Does the facility ensure that any surface which can be walked upon has sufficient load-bearing capacity and an anti-slip surface to prevent personnel from stepping through it or falling? [[*Building and Civil Engineering Work, AFS 1999:3, Section 60*](#)]
- Notes: Surfaces that do not meet this requirement must be closed off and marked, except where absolutely unnecessary, or special precautions must be taken to ensure that the work is done in a safe manner. [[*Building and Civil Engineering Work, AFS 1999:3, Section 60*](#)]
- 17.98** Does the facility ensure that workplace floors do not have any dangerous bumps, holes or slopes? [[*Building and Civil Engineering Work, AFS 1999:3, Section 60*](#)]
- 17.99** Are workstations, wherever located, of appropriate strength and stability, with regard to the following: [[*Building and Civil Engineering Work, AFS 1999:3, Section 61*](#)]
- Largest potential number of employees present in them;
 - Any loads which they must be capable of supporting and how these loads are distributed; and
 - Any other influence to which they may be subjected during use?

17.100 Are the stability and strength of workstations checked in a suitable manner and, in cases where workstations may be raised or lowered, after every raising or lowering? [[*Building and Civil Engineering Work, AFS 1999:3, Section 61*](#)]

17.101 Does the facility ensure that any space where work is to be done has sufficient surface area and height to allow the employees to perform their work without risk to their safety, health or well-being? [[*Building and Civil Engineering Work, AFS 1999:3, Section 62*](#)]

Notes: This requirement does not apply to work in existing buildings or structures if, for technical reasons, the requirements of sufficient surface area and height cannot be met. In such cases, the risks of injuries or accidents must be prevented by technical aids or organizational measures. [[*Building and Civil Engineering Work, AFS 1999:3, Section 62*](#)]

17.102 Are access routes provided to all workstations, and do they meet the following requirements: [[*Building and Civil Engineering Work, AFS 1999:3, Section 63*](#)]

- Provide easy, safe and appropriate access;
- Have protective devices; and
- Are designed, dimensioned and located to avoid the risks of falling, collapse, overturning or being struck by falling objects?

17.103 Does the facility ensure that, for indoor work, the thermal climate is appropriate and is adapted to the type of work performed (e.g., light or heavy, sedentary or mobile, etc.)? [[*Building and Civil Engineering Work, AFS 1999:3, Section 64*](#)]

17.104 Do windows have a device or design capable of excluding solar radiation? [[*Building and Civil Engineering Work, AFS 1999:3, Section 64*](#)]

17.105 Does the facility ensure that, for outdoor work, employees are protected against harmful atmospheric influences? [[*Building and Civil Engineering Work, AFS 1999:3, Section 64*](#)]

17.106 Does the facility ensure that air quality in workstations is satisfactory and that the following requirements are met: [[*Building and Civil Engineering Work, AFS 1999:3, Section 65*](#)]

- Air exchange is appropriate to the working methods used and the physical demands on the employees;
- If mechanical ventilation is used, it is kept in good working order and does not expose employees to unpleasant drafts; and

- Malfunctions are indicated by a control system, where necessary for the sake of employees' health?

17.107 Are safety precautions taken to protect employees against risks caused by the following: [Building and Civil Engineering Work, AFS 1999:3, Section 66]

- Stability and load-bearing capacity not being fully developed at various phases during the project execution stage; and/or
- Temporary fragility or instability of a structure?

17.108 Are areas where there is a risk of falling objects closed off and marked and, if such areas must be entered, are protective roofs, covered passageways, etc., provided? [Building and Civil Engineering Work, AFS 1999:3, Section 67]

17.109 Is the air checked and are any necessary measures taken (e.g., personal protective equipment (PPE) is provided/worn) before an employee enters a space or area that meets the following criteria: [Building and Civil Engineering Work, AFS 1999:3, Section 68]

- Air contaminants, oxygen deficiency or other dangerous atmospheric conditions may occur; and/or
- Air is readily ignitable?

17.110 Are employees working in confined spaces watched from outside and are appropriate precautions taken to ensure that they can be assisted quickly and effectively if the confined space meets the following criteria: [Building and Civil Engineering Work, AFS 1999:3, Section 69]

- Air contaminants, oxygen deficiency or other dangerous atmospheric conditions may occur; and/or
- Air is readily ignitable?

Notes: See Section 12.0 of this protocol for details on confined space work.

17.111 If the site includes limited access areas, are they equipped with devices to prevent unauthorized access, and are appropriate measures taken to protect authorized employees who enter these areas? [Building and Civil Engineering Work, AFS 1999:3, Section 70]

- 17.112** Are dangerous areas clearly signposted? [[*Building and Civil Engineering Work, AFS 1999:3, Section 70*](#)]
- 17.113** Are the following types of PPE made available to personnel and used: [[*Building and Civil Engineering Work, AFS 1999:3, Section 71*](#)]
- Safety helmet with chin straps and safety shoes with penetration-resistant soles and toe caps, except where absolutely unnecessary;
 - Ice prods, ice crampons, life jacket and life line, for work on ice-covered water; and
 - Any other necessary PPE?

VII. Building and Civil Engineering Work - Excavation and Demolition

Notes: See the Subsection entitled, "Building and Civil Engineering Work - General Requirements" for details about the applicability of this subsection.

- 17.114** Is earthwork planned and conducted in such a way that the stability of the ground is sufficient with regard to the loads to which it may be subjected and so that the risks of collapses, landslides, bottom heaves or other unplanned changes in the ground and flooding are prevented? [[*Building and Civil Engineering Work, AFS 1999:3, Section 72*](#)]
- 17.115** Before excavation begins, is an investigation made concerning the presence in the ground of the following: [[*Building and Civil Engineering Work, AFS 1999:3, Section 73*](#)]
- Materials or substances dangerous to health; and/or
 - Installations, cables or other distribution systems?

Notes: Necessary safety precautions must be taken if the materials, substances or objects identified in this question are found. [[*Building and Civil Engineering Work, AFS 1999:3, Section 73*](#)]

- 17.116** Are support structures used in connection with excavation, unless the risk of a collapse endangering health or safety is non-existent? [[*Building and Civil Engineering Work, AFS 1999:3, Section 74*](#)]

Notes: Alternatively, excavation may be carried out with a slope gradient. [[*Building and Civil Engineering Work, AFS 1999:3, Section 74*](#)]

Support structures or slope gradients must be designed to provide sufficient safety against collapses or other unplanned changes in the ground with regard to the loads occurring. [\[Building and Civil Engineering Work, AFS 1999:3, Section 74\]](#)

17.117 Are excavated materials and other materials positioned so that they do not cause the following: [\[Building and Civil Engineering Work, AFS 1999:3, Section 75\]](#)

- Risk due to collapses, falling stones, etc.; and/or
- Overloading of sheet piling, props and struts?

Notes: Excavated material, other materials and vehicle traffic must be kept away from the excavation. [\[Building and Civil Engineering Work, AFS 1999:3, Section 74\]](#)

17.118 If there is a risk of injury resulting from falls into excavations and wells, are these provided with protective covering or are they closed off by guardrails? [\[Building and Civil Engineering Work, AFS 1999:3, Section 75\]](#)

17.119 Are preventive measures taken to ensure that excavating and material-handling vehicles and machinery do not fall into the excavations or into water? [\[Building and Civil Engineering Work, AFS 1999:3, Section 75\]](#)

17.120 Is excavation started and conducted only under the direction of a competent person in the following circumstances: [\[Building and Civil Engineering Work, AFS 1999:3, Section 76\]](#)

- If the investigation described in Question [17.115](#) reveals the presence of material or substances dangerous to health, installations, or cables or other distribution systems; and/or
- If support structures or a slope gradient are needed (see Question [17.116](#))?

Notes: The term “competent person” is not defined in the Regulation.

17.121 Before demolition work begins, is an investigation carried out to ascertain whether materials or substances dangerous to health are present in the building or civil engineering works? [\[Building and Civil Engineering Work, AFS 1999:3, Section 78\]](#)

Notes: The presence of these materials or substances must be taken into consideration when planning the demolition. [\[Building and Civil Engineering Work, AFS 1999:3, Section 78\]](#)

- 17.122** Is demolition of load-bearing structures or demolition involving materials or substances dangerous to health planned and undertaken only under the direction of a competent person who provides continuous observation and supervision? [[*Building and Civil Engineering Work, AFS 1999:3, Section 79*](#)]

Notes: The term “competent person” is not defined in the Regulation.

- 17.123** Are demolition and boring activities carried out in such a way that the strength and stability of remaining parts of the building or civil engineering works are not endangered? [[*Building and Civil Engineering Work, AFS 1999:3, Section 80*](#)]
- 17.124** Does the facility ensure that building parts constituting support for other parts are not demolished until sufficient anchoring or bracing has taken place? [[*Building and Civil Engineering Work, AFS 1999:3, Section 80*](#)]
- 17.125** If a risk of collapse, overturning or falling objects arises during demolition work, is the danger area immediately evacuated and closed off? [[*Building and Civil Engineering Work, AFS 1999:3, Section 80*](#)]
- 17.126** Does the facility ensure that the machine operator is very familiar with the type of work for the following types of demolition: [[*Building and Civil Engineering Work, AFS 1999:3, Section 80*](#)]
- Demolition using an excavator or mobile crane; and
 - Demolition using a wrecking ball or by a ball fitted to the arm of the excavator or to the crane rope?

VIII. Building and Civil Engineering Work - Passing Vehicular Traffic

Notes: See the Subsection entitled, “Building and Civil Engineering Work - General Requirements” for details about the applicability of this subsection.

- 17.127** Is building and civil engineering work planned, arranged and undertaken to afford adequate safety against injuries and accidents from passing vehicular traffic? [[*Building and Civil Engineering Work, AFS 1999:3, Section 81*](#)]

Notes: “Passing vehicular traffic” means vehicular traffic passing by or through a place or area where building or civil engineering work is carried on. Vehicular traffic also includes track-bound traffic. Vehicular traffic does not, however, include traffic occurring on the site or in the area and which is connected with the current building or civil engineering work. [[*Building and Civil Engineering Work, AFS 1999:3, Section 3*](#)]

- 17.128** Are risks due to passing vehicular traffic prevented by taking the measures listed below, in the order given: [\[Building and Civil Engineering Work, AFS 1999:3, Section 81\]](#)
- Traffic is diverted so that work is not affected;
 - Traffic is directed so that vehicles pass by at a safe distance; or
 - Traffic is segregated from the worksite by means of traffic control devices, and, to the extent necessary, by protective devices excluding or diverting traffic from the worksite?
- 17.129** Are the following measures also considered, either separately, in combination with each other, or in combination with the measures in the second and third bullets in Question [17.128](#): [\[Building and Civil Engineering Work, AFS 1999:3, Section 81\]](#)
- Reducing the speed of the traffic past the worksite by means of road signs, road markings or another appropriate measures; and/or
 - Directing traffic past the worksite by means of a specially appointed signalman or by means of traffic signals?
- 17.130** Are traffic control devices and protective devices positioned and weighted or anchored in such a way that they cannot be ejected into the worksite by passing vehicles? [\[Building and Civil Engineering Work, AFS 1999:3, Section 81\]](#)
- 17.131** In applying the requirements of Question [17.127](#) through Question [17.130](#) to work in a track area with track-bound traffic passing by, is special care taken to ensure that the work is planned, arranged and undertaken to offer adequate safety against injuries and accidents from this traffic? [\[Building and Civil Engineering Work, AFS 1999:3, Section 82\]](#)
- 17.132** If a vehicle must pass through the place where the work is being undertaken and the employees, for safety reasons, must therefore leave their workstations, are measures taken to ensure that the employees have vacated the workstations before the vehicle passes? [\[Building and Civil Engineering Work, AFS 1999:3, Section 83\]](#)
- 17.133** If necessary, are special protective devices provided to protect employees from exposure to noise, vibration, or air pollution from passing vehicular traffic? [\[Building and Civil Engineering Work, AFS 1999:3, Section 84\]](#)

- 17.134** Are high-visibility clothes with reflectors provided to workers for the following tasks and in the following situations: [\[Building and Civil Engineering Work, AFS 1999:3, Section 85\]](#)
- The worksite is not segregated from passing vehicular traffic by protective devices effectively excluding or diverting traffic from the worksite; and/or
 - Workers serving as signalmen are employed at the worksite, with the task of directing the traffic and/or ensuring that employees leave the danger area when a vehicle approaches?
- 17.135** Is work started and undertaken only under the direction of a competent person in the following cases: [\[Building and Civil Engineering Work, AFS 1999:3, Section 86\]](#)
- It is intended that the risks due to traffic will be prevented through the measures described in the third bullet to Question [17.128](#); and/or
 - The work is concerned with the maintenance and repair of tracks with passing vehicular traffic?

Notes: The term “competent person” is not defined in the Regulation.

IX. Building and Civil Engineering Work - Work at Heights

Notes: See the Subsection entitled, “Building and Civil Engineering Work - General Requirements” for details about the applicability of this subsection.

- 17.136** When building products and other materials or materials with large surface areas are deposited on a roof or in other places at height, is the impact of wind taken into account? [\[Building and Civil Engineering Work, AFS 1999:3, Section 56\]](#)
- Notes: Anchorings and other stabilization measures must be designed and proportioned for the wind loads occurring. [\[Building and Civil Engineering Work, AFS 1999:3, Section 56\]](#)
- 17.137** Is the risk of an employee falling to a lower level prevented, where necessary, by guardrails, work platforms, scaffolding or work baskets? [\[Building and Civil Engineering Work, AFS 1999:3, Section 57\]](#)
- 17.138** Do guardrails meet the following requirements: [\[Building and Civil Engineering Work, AFS 1999:3, Section 57\]](#)
- Are of an appropriate strength and height;
 - Have at least a toeboard, a principal guardrail and an intermediate guardrail, or afford corresponding protection; and

- Are completely enclosed if loose objects may cause injury when falling through the guardrails?

17.139 If guardrails or other equipment described in Question [17.137](#) cannot be used, is personal fall protection equipment provided to workers? [[Building and Civil Engineering Work, AFS 1999:3, Section 58](#)]

17.140 If necessary, is an access route to areas with a risk of falls suitably arranged and, if unauthorized employees can enter the fall risk area, is it demarcated and closed off? [[Building and Civil Engineering Work, AFS 1999:3, Section 58](#)]

17.141 For work on roofs, is special account taken of the risk of accidents resulting from the following: [[Building and Civil Engineering Work, AFS 1999:3, Section 87](#)]

- Falls, treading through materials, slipping and tripping; and
- Unsuitable work postures and working movements?

Notes: Climatic factors must also be taken into consideration as they pertain to both bullets in this question. [[Building and Civil Engineering Work, AFS 1999:3, Section 87](#)]

17.142 Are materials and tools placed on roofs so that they cannot slide down, and are materials appropriately secured, if necessary? [[Building and Civil Engineering Work, AFS 1999:3, Section 87](#)]

17.143 For work on roofs, are the following requirements met: [[Building and Civil Engineering Work, AFS 1999:3, Section 88](#)]

- Permanently fitted equipment, a guardrail or other equipment affording corresponding protection, is used; or
- If it is not reasonable under the circumstances to use a guardrail or other equipment offering corresponding protection, personal fall protection equipment is used?

Notes: In assessing whether to use barriers or fall protection, the following must be taken into account: [[Building and Civil Engineering Work, AFS 1999:3, Section 88](#)]

- The time needed to fit the safety rail or equipment and the risks associated with doing so;
- The duration of the roof work to be undertaken; and

- The risks associated with the work if the guardrail or corresponding equipment is not used.

The requirements of this question need not be observed in connection with the replacement of single roof tiles or other similar temporary work on roofs, or in connection with rooftop snow clearance. Personal fall protection must be used for these activities. [[Building and Civil Engineering Work, AFS 1999:3, Section 89](#)]

- 17.144** If fall protection is used with a safety line, is the safety line secured to an appropriate device on the roof (e.g., a ridge rail)? [[Building and Civil Engineering Work, AFS 1999:3, Section 89](#)]

Notes: If a device for securing the safety line is lacking, or if there are other special circumstances that prevent the use of or reduce the effectiveness of a personal fall protection system, a person suitable for the task must be assigned to hold the safety line steady, preferably anchored by several turns around a structure. The safety line must be kept taut throughout the work. [[Building and Civil Engineering Work, AFS 1999:3, Section 89](#)]

For snow clearance, a person must be stationed to hold the safety line anchored by turns around a structure and to ensure that it is taut. [[Building and Civil Engineering Work, AFS 1999:3, Section 89](#)]

- 17.145** For work on roofs with more than a 1:4 (approximately 14 degrees) gradient, is a horizontal work surface provided if the work is done in a small area and if it is expected to last for more than 4 hours? [[Building and Civil Engineering Work, AFS 1999:3, Section 90](#)]

- 17.146** Before repair or maintenance work on a roof begins, is the state of the roof investigated, particularly with regard to its load-bearing capacity and surface roughness? [[Building and Civil Engineering Work, AFS 1999:3, Section 91](#)]

- 17.147** In the construction of roofs with self-supporting sheeting on roof beams, are the following requirements met: [[Building and Civil Engineering Work, AFS 1999:3, Section 92](#)]

- The weight of the sheeting packages is adapted to the load-carrying capacity of the roof;
- The packages are distributed on the roof at appropriate intervals to facilitate handling;

- The first sheets on the roof are laid from a scaffolding, work platform or other safe position; and
- Each sheet is secured immediately after it is laid out?

17.148 Are the manufacturer's instructions taken into account when safety nets are used? [[*Building and Civil Engineering Work, AFS 1999:3, Section 96*](#)]

Notes: A safety net is delivered accompanied by printed, Swedish-language instructions describing the intended assembly, use, dismantling, storage, care and inspection procedures, and providing warnings about factors which may adversely affect the net's function. [[*Building and Civil Engineering Work, AFS 1999:3, Section 94*](#)]

17.149 Are safety nets assembled only under the supervision of a competent person, and with the aim of minimizing the falling height? [[*Building and Civil Engineering Work, AFS 1999:3, Section 96*](#)]

Notes: The falling height must never exceed the intended height given in the instructions, or 6 meters. [[*Building and Civil Engineering Work, AFS 1999:3, Section 96*](#)]

17.150 Is the clearance under the net sufficient to ensure that a person falling into the net will not be injured by contact with any object underneath the net? [[*Building and Civil Engineering Work, AFS 1999:3, Section 96*](#)]

17.151 Is a safety net which has caught a falling person (or an object which may have imposed the corresponding stress) used only if it has subsequently been examined and found to be in working order by a competent person? [[*Building and Civil Engineering Work, AFS 1999:3, Section 97*](#)]

Notes: The term "competent person" is not defined in the Regulation.

17.152 After the date indicated in the manufacturer's instructions as the latest date upon which a test rope may be test-pulled, is a safety net with one or more test ropes used only if the following requirements are met: [[*Building and Civil Engineering Work, AFS 1999:3, Section 98*](#)]

- The test rope has been test-pulled;
- An assessment of the test results in accordance with the instructions has shown that the net still provides adequate protection;

- An assessment of the test results in accordance with the instructions has shown that the net still provides adequate protection until the next test-pull, or the date after which the net no longer provides adequate protection has been determined in accordance with the instructions; and
- The test-pull, assessment and determination were conducted by a competent person?

Notes: In the case of safety nets provided with one or more test ropes for checking the net's condition, the manufacturer's instructions will indicate the following: [\[Building and Civil Engineering Work, AFS 1999:3, Section 95\]](#)

- The latest date when the test ropes are intended to be test-pulled; and
- How the test results can be used for determining when the net no longer affords adequate protection.

A safety net with only one test rope may not be used after the time determined in the third bullet to this question. [\[Building and Civil Engineering Work, AFS 1999:3, Section 99\]](#)

A safety net with more than one test rope may not be used after the point in time which, following test-pulling of the last rope, has been determined in accordance with the third bullet to this question. [\[Building and Civil Engineering Work, AFS 1999:3, Section 99\]](#)

A safety net without a test rope may not be used after the date when, according to the written instructions, the net no longer provides adequate protection. [\[Building and Civil Engineering Work, AFS 1999:3, Section 99\]](#)

- 17.153** For work in temperatures below -10 degrees C, are safety nets chosen to ensure they contain material which retains its energy absorption capacity at the temperature concerned? [\[Building and Civil Engineering Work, AFS 1999:3, Section 100\]](#)

X. Demolition Work Involving Synthetic Inorganic Fibers

- 17.154** During demolition work with materials that consist of synthetic inorganic fibers, does the employer use appropriate work methods and take safety precautions? [\[Synthetic Inorganic Fibers, AFS 2004:1, Section 8\]](#)

Notes: This question applies to facilities that engage workers to conduct activities that involve the handling of synthetic inorganic fibers or materials that contain more than five percent synthetic inorganic fiber by weight. It applies to workplaces where dust is produced

following the regular treatment and handling of products made of ceramic fibers, special fibers or glass fibers. [*Synthetic Inorganic Fibers, AFS 2004:1, Sections 1 and 2.1*]

The following definitions apply to this question: [*Synthetic Inorganic Fibers, AFS 2004:1, Section 3*]

- “Fiber” means particles with a length/width ratio greater than 3:1; and
- “Handling” means production, processing, treatment, packaging, storage, transport, use, temporary possession, destruction, conversion and procedures included within these activities.

See Section 15.0 of this protocol for additional details related to synthetic inorganic fibers.

Table 17-1

**Contents of Prior Notification to the Swedish Work
Environment Authority of Construction Work**

1. Date of notification.
2. Location/ address of the construction site.
3. Name, address and telephone number of the person responsible for conducting the construction or engineering work, information on their registration number and contact person.
4. Type of project.
5. (a) Where appropriate, the name, address and telephone number of the contractor (as specified in Chapter 3, Section 7c of the Work Environment Act, SFS 1977:1160) who has responsibility for the work, and the contractor registration number and designated contact person.
(b) Start date of the project and the anticipated end date.
6. (a) Name and address of the Construction Work Environment Coordinator:
Responsible for coordination and planning (Chapter 3, Section 7a of the Work Environment Act, SFS 1977:1160), or
Responsible for execution (Chapter 3, Section 7b of the Work Environment Act, SFS 1977:1160).
(b) Information on the Construction Work Environment Coordinator's registration number and designated contact person.
(c) The time period for which the Construction Work Environment Coordinator is engaged.
7. Name, address and telephone number of the person who designed the object, together with information on their designated contact person and registration number.
8. Planned date for start of work on the construction site.
9. Planned date for conclusion of work on the construction site.
10. Estimated maximum number of persons on the construction site at any time.
11. Planned number of contractors and self-employed persons on the construction site.
12. Details of contractors already engaged, including name, address and telephone number, registration number, and information on the contact person for each.

Source: Building and Civil Engineering Work, AFS 1999:3, Annex 1.

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is provided for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter format does not contain the electronic links and other functionality contained in the MS Word version. The following instructions pertain to the fully linked Word version of the AQC.

Each question from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, electronic links back to the original protocol document are provided for quick access to this information when needed. To return to where you were in the AQC after following a link, use the back arrow located on the Audit Quick Check Toolbar.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an "X" into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X's to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

Additional audit questions can be added to the end of the AQC. Examples might include corporate requirements or best management practices. To add more questions, position the cursor outside of the right hand margin of the table, and hit "Enter." This will create a new row below. Continue to sequentially number the questions by putting your cursor in the first column and typing the desired number.

Please Note: Additional rows will be included in the sort function. It is important that you number the questions for the sort functions to work. Please consider the following sort rules when entering custom text.

Sorting Responses

The AQC sort feature is accessed from the IAPC menu item located on the far right on the Main MS Toolbar. Please note the following criteria to take full advantage of this feature.

You can change the column titles as you see fit, but the menus assume that:

- the first column contains the question number and question text;
- the second column is "Not Applicable" (N/A) entries;
- the third column is "Complies" entries; and
- the fourth column is "Does Not Comply" entries.

A question is considered "Complies" if there is any text ("X" or "YES", for instance) in the "Complies" column.

A question is considered "Incomplete" if columns 2 to 4 are all empty.

Only one column should contain a value for any given question.

Click the IAPC menu item and then select one of the following menu choices:

Sort by Question Number

- Sorts the section by question number

Sort with Incomplete first

- Sorts the section with Incomplete first, Does Not Comply next, Complies next, then N/A

Sort with Non-compliant first

- Sorts the section with Does Not Comply first, Complies next, N/A next, then Incomplete

Sort with Compliant first

- Sort the section with Complies items first, Does Not Comply next, N/A next, then Incomplete

Sort with Not Applicable last

- Sort the section with not-applicable items last (Complies first, Does Not Comply next, Incomplete next, then N/A)

For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click the IAPC menu item and choose "Sort with Non-compliant first". Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

Once the completed AQC is sorted, save or print a copy of the results. The AQC can then be re-sorted using a different option.

SECTION 17.0 CONSTRUCTION WORK SITE SAFETY

AUDIT QUICK CHECK

SITE: _____ DATE: _____
 ASSESSOR: _____

	Not Applicable	Complies	Does Not Comply
Q17.1 Does the facility have a building permit if it undertakes any of the following activities: <i>[Planning and Building Act, SFS 2010:900, Chapter 9, Section 2]</i> – Erects a building; – Erects extensions to a building; – Uses or adapts a building either wholly or partly for a purpose substantially different from the purpose for which the building previously had been used or for which a building permit was previously granted; or – Makes alterations to a building to provide additional rooms or spaces for retail, handicraft or industrial activities? See protocol for notes. I. Permits and Notifications Comments:			
Q17.2 If the facility is located in an area covered by a detailed development plan, did it obtain a building permit before repainting buildings, replacing facing or roofing material, or making other alterations which changed a building's external appearance? <i>[Planning and Building Act, SFS 2010:900, Chapter 9, Section 2(3)(c) and Section 3]</i> I. Permits and Notifications Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.3 Does the facility have a demolition permit for a project in the following circumstances: [<i>Planning and Building Act, SFS 2010:900, Chapter 9, Section 10</i>] – A building located in an area covered by a detailed development plan, where the plan does not specify otherwise; and – A building outside of an area covered by a detailed development plan where other regulations require a permit for demolition? See protocol for notes. I. Permits and Notifications Comments:			
Q17.4 Unless the detailed development plan contains provisions to the contrary, does the facility obtain a site improvement permit for excavation and filling of sites which may cause a substantial change in the height of any site or any land used for public space? [<i>Planning and Building Act, SFS 2010:900, Chapter 9, Section 11</i>] See protocol for notes. I. Permits and Notifications Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.5 Did the facility notify the Municipal Building Committee in advance of construction, demolition or site work which does not require a permit but which does require notification according to the regulations issued under the <i>Planning and Building Act, SFS 2010:900</i>, Chapter 16, Section 8? [<i>Planning and Building Act, SFS 2010:900, Chapter 9, Section 16</i>] See protocol for notes. I. Permits and Notifications Comments:			
Q17.6 Do construction or demolition notifications specify the following: [<i>Planning and Building Ordinance, SFS 1987:383, Section 15a</i>] – Address where the building or demolition works are intended to take place; – Name and address of the construction client; and – Date on which the building or demolition works are planned to commence? I. Permits and Notifications Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.7 Did the builder receive a start notification (<i>startbesked</i>) from the Municipal Building Committee prior to beginning any construction work for the following: [<i>Planning and Building Act, SFS 2010:900, Chapter 10, Section 3</i>] – Work requiring a building, demolition or site improvement permit; or – Work requiring a notification according to regulations issued under the <i>Planning and Building Act, SFS 2010:900</i>? See protocol for notes. I. Permits and Notifications Comments:			
Q17.8 Does the construction client ensure that work is conducted according to the control plan submitted for permitted and notified projects? [<i>Planning and Building Act, SFS 2010:900, Chapter 10, Section 5</i>] See protocol for notes. I. Permits and Notifications Comments:			
Q17.9 Do all persons who perform inspections according to the control plan meet the following requirements: [<i>Planning and Building Act, SFS 2010:900, Chapter 10, Section 9</i>] – Have the knowledge, experience and suitability required, as demonstrated by having a certification for such activities; and – Are independent from those who are being inspected? I. Permits and Notifications Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.10 Does the construction client coordinate the activities of inspectors when there are multiple inspectors? [<i>Planning and Building Act, SFS 2010:900, Chapter 10, Section 9</i>] I. Permits and Notifications Comments:			
Q17.11 If a construction inspector does not perform their duty, does the construction client immediately notify the Municipal Building Council of this fact, and if a construction inspector is no longer available, does the construction client appoint a new construction inspector? [<i>Planning and Building Act, SFS 2010:900, Chapter 10, Sections 12 and 13</i>] I. Permits and Notifications Comments:			
Q17.12 If insurance is required for the construction, has the facility provided proof of insurance to the Municipal Building Committee? [<i>Planning and Building Act, SFS 2010:900, Chapter 10, Section 16</i>] I. Permits and Notifications Comments:			
Q17.13 If a building project required a technical consultation, did the facility receive final clearance at the completion of the project? [<i>Planning and Building Act, SFS 2010:900, Chapter 10, Section 30</i>] I. Permits and Notifications Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.14 Does the facility ensure that the person(s) appointed to be responsible for quality matters have suitable education and experience for the duty? <i>[Planning and Building Ordinance, SFS 1987:383, Section 17]</i> See protocol for notes. I. Permits and Notifications Comments:			
Q17.15 If the facility commissions construction or heavy engineering work, does it ensure that safety and health are taken into consideration at every stage of the planning and design, both during the construction stage and considering future use? <i>[Work Environment Act, SFS 1977:1160, Chapter 3, Section 6]</i> II. Construction Work Safety and Coordination Comments:			
Q17.16 If building or construction work is undertaken at the facility, has the facility appointed a Construction Work Environment Coordinator? <i>[Work Environment Act, SFS 1977:1160, Chapter 3, Section 6]</i> See protocol for notes. II. Construction Work Safety and Coordination Comments:			

		Not Applicable	Complies	Does Not Comply
Q17.17 Does the facility ensure that building, demolition or earthwork sites are arranged so that the entry of unauthorized persons is prevented and the risk of injury to persons is limited? [<i>Building Regulations, BFS 1993:57, Section 2:3</i>] III. General Requirements for Construction Works Comments:				
Q17.18 Are measures taken to protect against the outbreak and spread of fire and against the emission of noise and dust? [<i>Building Regulations, BFS 1993:57, Section 2:3</i>] III. General Requirements for Construction Works Comments:				
Q17.19 If a building or part of a building is used or put into service when building or demolition work is in progress, are necessary measures taken to protect the occupants and users against injuries, and, if regular escape routes cannot be used, are temporary ones provided? [<i>Building Regulations, BFS 1993:57, Section 2:3</i>] III. General Requirements for Construction Works Comments:				

		Not Applicable	Complies	Does Not Comply
Q17.20 Are any alterations to or relocation of a building made with care and with regard to the building's: [<i>Planning and Building Act, SFS 2010:900, Chapter 8, Section 17</i>] – Characteristic features; – Technical features; – Historical, cultural and artistic value; and – Effects on the environment? See protocol for notes. III. General Requirements for Construction Works Comments:				
Q17.21 Is construction work conducted and are construction sites maintained so that: [<i>Planning and Building Act, SFS 2010:900, Chapter 8, Sections 14 and 15</i>] – The design and technical features are preserved; – The risk of accidents is limited; and – Inconvenience to the surroundings and traffic is prevented? See protocol for notes. III. General Requirements for Construction Works Comments:				

	Not Applicable	Complies	Does Not Comply
Q17.22 If a building to be demolished is infested with vermin or wood-destroying insects, are these vermin and insects exterminated? [<i>Planning and Building Ordinance, SFS 1987:383, Section 20</i>] III. General Requirements for Construction Works Comments:			
Q17.23 Are materials capable of causing adverse effects to humans, flora or fauna handled in a safe manner during demolition? [<i>Planning and Building Ordinance, SFS 1987:383, Section 20</i>] See protocol for notes. III. General Requirements for Construction Works Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.24 Does the facility ensure that constructions are built, altered and maintained to comply with essential technical requirements concerning the following: <i>[Planning and Building Act, Chapter 8, Section 4]</i> – Load bearing capacity, stability and durability; – Safety in case of fire; – Precautions with regard to health, hygiene and environment; – Safety in use; – Protection against noise; – Energy economy and thermal insulation; – Suitability for intended purpose; – Accessibility and fitness for use with regard to persons with limited mobility or orientation capacity; and – Economical management of waste and water? IV. Technical Requirements for Construction Works Comments:			
Q17.25 Are lifts in buildings equipped to reasonably fulfill the technical requirements described in Question 17.24? <i>[Planning and Building Act, SFS 2010:900, Chapter 8, Section 24]</i> IV. Technical Requirements for Construction Works Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.26 Are construction works designed and built in such a way that the impacts likely to occur during the period of building and use will not lead to any of the following: [<i>Ordinance on Technical Requirements for Construction Works, Etc., SFS 1994:1215, Section 3</i>] – Collapse of all or part of the structure; – Major deformations to an unacceptable degree; – Damage to other parts of the construction or to installations or equipment as a result of major deformation of the load-bearing construction; or – Damage to an extent disproportionate to the cause of action? IV. Technical Requirements for Construction Works Comments:			
Q17.27 Are construction works built in such a way that, in the event of an outbreak of fire, the following requirements are met: [<i>Ordinance on Technical Requirements for Construction Works, Etc., SFS 1994:1215, Section 4</i>] – The load-bearing capacity of the construction can be assumed to hold for a known period of time; – The generation and spread of fire and smoke within the construction are limited; – The spread of fire to neighboring construction works is limited; – People inside the construction works are able to leave or to be rescued by other means; and – The safety of rescue teams is taken into consideration? IV. Technical Requirements for Construction Works Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.28 Are construction works designed and built in such a way that they will not present an unacceptable risk to the hygiene or health of users or neighbors, and in particular, are the following factors taken into account: [<i>Ordinance on Technical Requirements for Construction Works, Etc., SFS 1994:1215, Section 5</i>] – The emission of toxic gases; – The presence of dangerous particles or gases in the air; – The emission of dangerous radiation; – Pollution or poisoning of the soil or water; – Poor disposal of waste water, smoke, or solid or liquid waste; and – The presence of dampness? IV. Technical Requirements for Construction Works Comments:			
Q17.29 Are construction works designed and built in such a way that the following requirements are met: [<i>Ordinance on Technical Requirements for Construction Works, Etc., SFS 1994:1215, Sections 6 through 8</i>] – Unacceptable risks of accidents in service or in operation, such as slipping, falling, collision, burns, electrocution and injury from explosion are prevented; – Noise perceived by users or other people near the construction works is kept to a level that will not present an unacceptable risk to their health and will allow them to sleep, rest and work in satisfactory conditions; and – Heating, cooling, and ventilation installations are built in such a way that the energy required for use is low, having regard to the climatic conditions of the location and the occupants? IV. Technical Requirements for Construction Works Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.30 Are all building products used in construction suitable for the intended purpose and use? [<i>Planning and Building Act, SFS 2010:900, Chapter 8, Section 19</i>] See protocol for notes. IV. Technical Requirements for Construction Works Comments:			
Q17.31 Is the heating system of a building designed to meet the following requirements: [<i>Ordinance on Technical Requirements for Construction Works, Etc., SFS 1994:1215, Sections 10, 12 and 13</i>] – Allows for alternate sources of energy without extensive alterations, to the extent that this is reasonable in consideration of the heating method and the source of energy supply; See protocol for notes. – Is accessible to, and useable by, people with limited mobility or orientation capacity; – Is fitted with lifts or other lifting appliances to the extent needed to meet the requirement of the previous bullet; and – Allows good economy in the use of water? IV. Technical Requirements for Construction Works Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.32 If special provisions established by the supervisory authority require inspections of the performance of ventilating systems to ensure a satisfactory indoor climate, does the facility appoint a performance inspector to carry out the inspection? [<i>Planning and Building Act, SFS 2010:900, Section 25</i>] See protocol for notes. IV. Technical Requirements for Construction Works Comments:			
Q17.33 During the preparation and design of the project, does the facility take particular account of safety and health conditions during the construction stage, with particular attention paid to the following: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 5</i>] – Positioning and design of the object or structure; – Choice of building products; – Choice of structures for foundation, framework systems or other load-bearing elements; – Choice and design of structure completion; – Choice of installations and their positioning; and – Choice of interior fittings? V. Building and Civil Engineering Work - General Requirements Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.34 At every stage of planning and design, does the facility ensure that the following requirements are met regarding the working environment: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 5a</i>] – The time allowed for construction and for different phases of construction is sufficient to ensure that work proceeds at a pace that avoids the risk of illness and accidents; – Transport of construction materials, demolition materials and equipment occurs in an acceptable way for work site safety and health; and – The area of activity is large enough so that offices, staff facilities, etc., required for all activities at the workplace will not become too crowded? V. Building and Civil Engineering Work - General Requirements Comments:			
Q17.35 Is building and construction work planned and designed in a timely manner before the execution of the work so that it is possible to coordinate the work and to avoid risks to occupational safety and health arising from lack of sufficient coordination time? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 5b</i>] V. Building and Civil Engineering Work - General Requirements Comments:			

		Not Applicable	Complies	Does Not Comply
Q17.36 Before undertaking building or construction work, are the following requirements met: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 5b</i>] – Before demolition, reconstruction or renovation of an object or part of an object, the health risks associated with hazardous materials and risks associated with the stability of the item are assessed; – The presence of materials hazardous to health is assessed before demolition begins and the presence of such materials is verified; and – If knowledge of the hazards of materials is not known by other means, sampling and, if necessary, analysis of the materials is performed? V. Building and Civil Engineering Work - General Requirements Comments:				
Q17.37 Is prior notification of construction work submitted to the Swedish Work Environment Authority in accordance with Table 17-1 if the construction site meets either of the following requirements: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 7</i>] – Work is scheduled to last longer than 30 working days and more than 20 persons are occupied simultaneously at any one time; or – The volume of work is expected to exceed 500 person-days? V. Building and Civil Engineering Work - General Requirements Comments:				

	Not Applicable	Complies	Does Not Comply
Q17.38 Is a copy of the prior notification to the Work Environment Authority displayed clearly at the workplace and updated regularly? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 7</i>] <RECORD KEEPING> V. Building and Civil Engineering Work - General Requirements Comments:			
Q17.39 Does the facility ensure that a work environment plan is drafted and available before the construction site is set up, if either of the following conditions is met: [<i>Building and Civil Engineering Work, AFS 1999:3, Sections 8 and 12</i>] – Any of the particular work activities indicated in Question 17.40, third bullet, is carried out in connection with the building or engineering work; or – The work requires prior notification (see Question 17.37)? V. Building and Civil Engineering Work - General Requirements Comments:			
Q17.40 Does the work environment plan include the following information: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 12a</i>] – Rules to be applied on the construction site; – Description of how health and safety work will be organized; and – A description of the special measures to be taken during the project execution stage in order to satisfy health and safety conditions to meet the requirements of the <i>Work Environment Act, SFS 1977:1160</i> and its regulations, together with other regulations of the Work Environment Authority or the former National Occupational Health and Safety Board issued under the <i>Work Environment Ordinance, SFS 1977:1166</i>, which are applicable if the facility conducts any of the following: – Work entailing a risk of falls to lower levels, if the difference in level is 2 meters or more;			

	Not Applicable	Complies	Does Not Comply
– Work entailing a risk of burial under landslides or engulfment in loose soil; – Work with chemical or biological substances constituting a particular danger to safety and health or involving a legal requirement (according to the Work Environment Authority or prior National Occupational Safety and Health Board) for medical surveillance (see Section 15.0 of this protocol); – Work which exposes workers to ionizing radiation requiring the designation of controlled or supervised areas, according to <i>SSI FS 1998:3</i> (now replaced by the <i>Regulations on Basic Requirements for Protection of Workers and the Public Regarding Workplaces with Ionizing Radiation, SSMFS 2008:51</i>, see Section 15.0 of this protocol); – Work near high voltage power lines; – Work entailing a risk of drowning; – Work involving the use of explosive substances; – Work involving the introduction, assembly and dismantling of heavy prefabricated components or heavy shuttering elements; – Work in a place or area with passing vehicular traffic (see the Subsection entitled, "Building and Civil Engineering Work - Passing Vehicular Traffic" for more details); and/or – Demolition of load-bearing structures or health-endangering materials or substances? See protocol for notes. V. Building and Civil Engineering Work - General Requirements Comments:			

		Not Applicable	Complies	Does Not Comply
Q17.41 Does the facility ensure that appropriate modifications are made to the work site safety and health plan, taking into account the progress of the work at the site and any changes to the work? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 8</i>] V. Building and Civil Engineering Work - General Requirements Comments:				
Q17.42 Does the facility ensure that a site file is compiled that meets the following requirements: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 9</i>] <RECORD KEEPING> – Contains the information specified in Section 12(b) (see Question 17.44); – Is updated to document all changes to the project as necessary, according to the progress of work and any changes occurring during execution of the project; and – Is maintained for as long as the constructed object remains in existence, and is transferred to any new owner of the construction object? V. Building and Civil Engineering Work - General Requirements Comments:				

		Not Applicable	Complies	Does Not Comply
Q17.43 Is a Construction Work Environment Coordinator appointed to attend to matters of safety and health and to coordinate during the preparation and design of the project, and does that person have knowledge of building and civil engineering work and competence related to safety and health matters? [Building and Civil Engineering Work, AFS 1999:3, Section 5b and 6] See protocol for notes. V. Building and Civil Engineering Work - General Requirements Comments:				
Q17.44 Does the Construction Work Environment Coordinator maintain documentation regarding construction activities until the construction work is completed, including the following: [Building and Civil Engineering Work, AFS 1999:3, Section 12b] <RECORD KEEPING> – A description of the construction object, including design and building products used; and – All necessary information relating to safety and health during the construction work and for use of the construction object when brought into service, and relating to maintenance, repair, modification and demolition of the construction object? V. Building and Civil Engineering Work - General Requirements Comments:				
Q17.45 Does the Construction Work Environment Coordinator meet the following requirements: [Building and Civil Engineering Work, AFS 1999:3, Sections 13 through 16] – Participates in planning of work and ensures that common work environment items are taken into account when work methods and work equipment are used, where different works are planned and undertaken simultaneously; – Organizes safety protection at the workplace, including organizing joint safety protection if several works are undertaken at the same work site;				

	Not Applicable	Complies	Does Not Comply
– Ensures that the work environment plan requirements in Sections 8, 12 and 12a (see Question 17.39 and Question 17.40) are implemented appropriately as soon as the construction site is established; – Updates the work environment plan as the work progresses, noting any changes that must be made to the work, the actual changes made to work methods used, and the appropriate conditions for undertaking the work; – Updates the written documentation of how the work relating to the work environment is organized; – Updates all written documentation with the significant changes and changes to conditions that are necessary to be made to the work environment; – Has oversight of inspections, and ensures that technical devices are subjected to the required inspections and tests, and that users of such devices have sufficient competence and, if appropriate, the necessary permit; and – If the Construction Work Environment Coordinator or his/her representative is not able to be present at the work site, ensures that information indicating a secondary contact person, or several if necessary, is available, and that there is always information on how to reach someone at all times that work is being conducted? V. Building and Civil Engineering Work - General Requirements Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.46 Do the persons conducting activities at worksites comply with the following requirements: [<i>Building and Civil Engineering Work, AFS 1999:3, Sections 17 and 18</i>] – Furnish the Construction Work Environment Coordinator with particulars of the special risks that may be caused by the activity; – Comply with the rules of order and safety issued by the Construction Work Environment Coordinator; – Take part in the management of the working environment; – Help to maintain good order and to ensure that the construction site is not unnecessarily encumbered with materials, equipment, packaging, refuse, etc.; and – Clean the site periodically? VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.47 When planning for building or construction work, are all factors relevant to the work considered, and are risks of illness and accidents at work assessed as early as possible, with special attention to the following: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 19</i>] – The risk of ignition and the spread of fire; and – Access and the arrangement of access points and roads? VI. Building and Civil Engineering Work - Safety Measures Comments:			

		Not Applicable	Complies	Does Not Comply
Q17.48 Are storage areas, warehouses, workshops and staff facilities located so that activities can be carried out safely? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 20</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.49 Do workers have access to drinking water in the vicinity of their workstations? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 20</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.50 When choosing the location of workstations, are access and communication routes taken into consideration? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 21</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.51 If work is carried out near water or a high-voltage power installation, is protection provided against the special risks this can entail? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 22</i>] See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:				

	Not Applicable	Complies	Does Not Comply
Q17.52 Is any place or area where building or civil engineering work is carried on demarcated in a way that is clearly visible and identifiable (e.g., signs are erected in suitable locations around the construction site and in its vicinity)? <i>[Building and Civil Engineering Work, AFS 1999:3, Section 23]</i> VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.53 Before building or civil engineering work begins, is an investigation made to ascertain whether there are installations, cables, or other distribution systems in the ground or in existing parts of the building or structure which may be affected by the work, and are such systems clearly marked so that the risks associated with them are reduced to a minimum? <i>[Building and Civil Engineering Work, AFS 1999:3, Section 24]</i> VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.54 Is any installation for electricity, water, gas, etc. constructed so that it may be used safely throughout the project execution stage, and are such installations designed and located so that they are protected from inadvertent influence? <i>[Building and Civil Engineering Work, AFS 1999:3, Section 25]</i> VI. Building and Civil Engineering Work - Safety Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.55 Is sufficient space provided, to the extent necessary, for the reception, storage and safe keeping of building products and other materials used in the work, and is any area used for the storage of dangerous substances demarcated and laid out in such a way that the health hazards and accident risks are averted? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 26</i>] See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.56 Is it possible for all workstations to be evacuated and for all employees to reach a safe area quickly and safely in the event of fire, escaping gas, or other emergencies? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 27</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.57 Do escape routes meet the following requirements: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 28</i>] – Number, distribution and dimensions are adapted to the use, equipment and dimensions of the construction site, spaces and work premises, and to the maximum number of persons who may be present; – Routes are marked with signs that are sufficiently durable and placed at appropriate points; and – Routes requiring illumination are provided with emergency lighting of adequate intensity in the event that normal lighting fails (see Question 17.78)? VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.58 Are escape routes and communication routes, as well as the doors leading to them, free from obstructions so that they may be used at any time without inconvenience? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 29</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.59 Do doors for evacuation routes meet the following requirements: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 30</i>] – Open outwards in the evacuation direction; – Are not locked/fastened; – Can be immediately and easily opened by any person in the event of an emergency; – Are appropriately marked; and – Sliding or revolving doors are not used? VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.60 Are the following first aid requirements met: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 31</i>] – First aid is available; – Staff trained to provide first aid are available at all times; – Areas or places for first aid are provided to the extent appropriate to the nature and scale of the activity; – Equipment and areas or places for first aid are identified by signs; and – Addresses and telephone numbers of ambulance and rescue services are clearly displayed? VI. Building and Civil Engineering Work - Safety Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.61 Is fire-fighting equipment and, where necessary, are fire detectors and alarm systems provided to prevent the occurrence and spread of fire, and are their number and design adapted to conform to the following factors: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 32</i>] – Conditions where the building or civil engineering work is carried out; – Size and use of the spaces; – Equipment used; – Physical and chemical properties of the building products and the substances present; – Maximum potential number of people present in the spaces and work premises and on the construction site; and – The performance of appropriate tests and drills that are conducted at regular intervals? VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.62 Does non-automatic fire-fighting equipment meet the following requirements: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 33</i>] – Simple to use; – Easily accessible; and – Indicated by signs? See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:			

		Not Applicable	Complies	Does Not Comply
Q17.63 Are sliding doors fitted with a safety device to prevent them from being derailed or falling over, and are doors and gates opening upwards fitted with a mechanism to secure them against falling back down? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 34</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.64 Do mechanical doors and gates meet the following requirements: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 35</i>] – Operate without any risk of accident to the employees; – Are fitted with emergency stop devices which are easily identifiable and accessible; and – Unless they open automatically in the event of a power cut, can be opened manually? VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.65 Are doors for pedestrian traffic provided in the immediate vicinity of gates intended for vehicle traffic, unless it is safe for pedestrians to use the gates, and are such doors clearly marked and kept free from obstructions at all times? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 35</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				

		Not Applicable	Complies	Does Not Comply
Q17.66 Are windows, skylights, ventilators and smoke hatches possible to open, close, adjust and secure in a safe manner, and does the facility ensure that, when opened or unlocked, these units do not constitute a hazard to employees? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 36</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.67 Are windows and skylights designed for equipment or otherwise fitted with devices which allow them to be cleaned without risk to the person conducting the cleaning or to other employees? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 36</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.68 Are walls of glass or other transparent/translucent materials in the vicinity of workplaces or of access or communication routes clearly indicated and made of shatter-proof materials or shielded to prevent employees from coming into contact with them or being injured if the walls shatter? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 37</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				

	Not Applicable	Complies	Does Not Comply
Q17.69 Are construction sites equipped with safe communication routes, loading bays, loading towers and load openings which meet the following requirements: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 38</i>] – Have protective devices and are designed, proportioned and located to avoid a risk of falls and falling objects; – Communication routes are clearly marked if necessary for the safety of employees, depending on the equipment on the site and other conditions; – Loading bays have at least one exit point; and – Loading towers have a gate or barrier which can be easily and safely opened and closed in connection with transport operations? VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.70 Do communication routes to a higher or lower level consist of stairs or a ramp? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 39</i>] See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.71 Do stairs have sufficient width and do they have a suitable gradient? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 39</i>] See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.72 If needed due to the height of the stairs, are landings provided at suitable distances? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 39</i>] See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.73 Are handrails and guardrails provided on stairs and landings? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 39</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.74 Does any permanently fixed ladder which is vertical or near-vertical and more than 6 meters in length have cage protection down to a height of approximately 2.5 meters above the ground or another level? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 39</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.75 Are transport routes intended for motor vehicles designed with due regard to traffic safety, and are they provided with adequate safety clearance or other protective devices? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 40</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:			

		Not Applicable	Complies	Does Not Comply
Q17.76 Is sufficient clearance allowed between vehicle traffic routes and doors, gates, passages for pedestrians, corridors and staircases? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 41</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.77 Are workstations and other spaces, as well as transport and access routes, arranged, as far as possible, to receive adequate daylight? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 42</i>] See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.78 Are spaces, workstations and communication and access routes where employees are especially exposed to risks in the event of power cuts provided with emergency lighting of adequate intensity? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 43</i>] See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:				

	Not Applicable	Complies	Does Not Comply
Q17.79 Are lighting installations of a type and positioning that does not entail a risk of accident to employees? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 44</i>] See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.80 Are working methods and equipment chosen as follows: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 45</i>] – To counteract accidents due to falls or collapses, overturning or falling objects; – To avoid physical loads which are dangerous to health or are unnecessarily fatiguing; – Are appropriate to the properties of the building products; – Entail low exposure to noise, vibration, dangerous substances and air contaminants; and – Are suitable for foundations and structural systems and for the completion of the structure (<i>stomkomplettering</i>, including interior walls, rough and finish carpentry), installations and interior fittings? VI. Building and Civil Engineering Work - Safety Measures Comments:			

		Not Applicable	Complies	Does Not Comply
Q17.81 Is suitable equipment provided for lifting and conveying building products and other materials, if needed in order for the employees not to be subjected to loads which are dangerous to health or unnecessarily fatiguing? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 46</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.82 Do lifting devices and accessories, including their component parts, attachments, anchorings and supports, fulfill the following requirements: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 46</i>] – Are properly designed and constructed and sufficiently strong for their intended use; and – Clearly display their maximum load values? VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.83 Are lifting devices and accessories operated by qualified workers who have received appropriate training, and does the facility ensure that the devices are not used for purposes other than those for which they were intended? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 46</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				

	Not Applicable	Complies	Does Not Comply
Q17.84 Does the facility ensure that equipment and devices (including hand-held tools) chosen are properly designed and in accordance with ergonomic principles, and that they are operated only by employees with adequate skills for the purposes for which they were intended? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 47</i>] See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.85 Are shutterings and temporary supports designed, installed and maintained so that they safely withstand the loads or stresses to which they may be subjected? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 47</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.86 Are vehicles powered by internal combustion engines, as well as machinery and other equipment, used in such a way as to not expose persons operating them or working near them to harmful concentrations of exhaust fumes? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 47</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.87 Is the following information concerning the building or civil engineering work supplied to workers, in a comprehensible manner, as follows: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 48</i>] – The rules to be applied concerning health and safety measures taken or planned, to all workers; and – Information about the safe conduct of work, to workers to the extent necessary? VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.88 Are equipment and installations procured and used in the work activities inspected before use, and are they inspected and maintained periodically and after events which may affect their working order? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 49</i>] See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.89 If the inspections described in Question 17.88 reveal deficiencies which pose a serious danger to safety or health, does the facility suspend work immediately until the deficiencies have been corrected? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 50</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:			

		Not Applicable	Complies	Does Not Comply
Q17.90 Does the facility ensure that launching, assembly or dismantling of heavy prefabricated elements or heavy building components is only commenced and carried out under the direction of a competent person? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 51</i>] See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.91 Are projecting or upward-pointing building parts or sharp or pointed objects removed or shielded if necessary to avoid accidents? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 52</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.92 Is the transport of building products or other materials planned and conducted in such a way that injuries or accidents are prevented? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 53</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				

		Not Applicable	Complies	Does Not Comply
Q17.93 Is transport up to or down from a level more than 2 meters above the ground level or the working level conducted in such a way that a guardrail or other protective device does not need to be removed, or by one of the following methods: <i>[Building and Civil Engineering Work, AFS 1999:3, Section 53]</i> – Loading towers; – Load openings in facades; – Specially provided ramps; or – Specially provided transport systems? See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.94 Does the facility ensure that storage, handling and removal of building and demolition wastes takes place in a safe manner, and that special attention is paid to conditions when used dangerous materials, used dangerous substances, and packaging which contained dangerous substances are removed from the site or area? <i>[Building and Civil Engineering Work, AFS 1999:3, Section 54]</i> VI. Building and Civil Engineering Work - Safety Measures Comments:				

		Not Applicable	Complies	Does Not Comply
Q17.95 Are building products, other materials, and equipment which may move in any way and which could cause occupational accidents or injuries stabilized in an appropriate and safe manner? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 55</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.96 Are openings and holes in floors, roofs, etc. where there is a risk of falling or stepping through such areas provided with a guardrail or protective covering which meets the following requirements: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 59</i>] – Cannot be inadvertently disturbed; – Has sufficient load-bearing capacity; and – Its purpose is clearly evident or it is clearly marked? VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.97 Does the facility ensure that any surface which can be walked upon has sufficient load-bearing capacity and an anti-slip surface to prevent personnel from stepping through it or falling? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 60</i>] See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:				

	Not Applicable	Complies	Does Not Comply
Q17.98 Does the facility ensure that workplace floors do not have any dangerous bumps, holes or slopes? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 60</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.99 Are workstations, wherever located, of appropriate strength and stability, with regard to the following: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 61</i>] – Largest potential number of employees present in them; – Any loads which they must be capable of supporting and how these loads are distributed; and – Any other influence to which they may be subjected during use? VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.100 Are the stability and strength of workstations checked in a suitable manner and, in cases where workstations may be raised or lowered, after every raising or lowering? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 61</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.101 Does the facility ensure that any space where work is to be done has sufficient surface area and height to allow the employees to perform their work without risk to their safety, health or well-being? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 62</i>] See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.102 Are access routes provided to all workstations, and do they meet the following requirements: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 63</i>] – Provide easy, safe and appropriate access; – Have protective devices; and – Are designed, dimensioned and located to avoid the risks of falling, collapse, overturning or being struck by falling objects? VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.103 Does the facility ensure that, for indoor work, the thermal climate is appropriate and is adapted to the type of work performed (e.g., light or heavy, sedentary or mobile, etc.)? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 64</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:			

		Not Applicable	Complies	Does Not Comply
Q17.104	Do windows have a device or design capable of excluding solar radiation? <i>[Building and Civil Engineering Work, AFS 1999:3, Section 64]</i> VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.105	Does the facility ensure that, for outdoor work, employees are protected against harmful atmospheric influences? <i>[Building and Civil Engineering Work, AFS 1999:3, Section 64]</i> VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.106	Does the facility ensure that air quality in workstations is satisfactory and that the following requirements are met: <i>[Building and Civil Engineering Work, AFS 1999:3, Section 65]</i> – Air exchange is appropriate to the working methods used and the physical demands on the employees; – If mechanical ventilation is used, it is kept in good working order and does not expose employees to unpleasant drafts; and – Malfunctions are indicated by a control system, where necessary for the sake of employees' health? VI. Building and Civil Engineering Work - Safety Measures Comments:			

		Not Applicable	Complies	Does Not Comply
Q17.107 Are safety precautions taken to protect employees against risks caused by the following: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 66</i>] – Stability and load-bearing capacity not being fully developed at various phases during the project execution stage; and/or – Temporary fragility or instability of a structure? VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.108 Are areas where there is a risk of falling objects closed off and marked and, if such areas must be entered, are protective roofs, covered passageways, etc., provided? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 67</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:				
Q17.109 Is the air checked and are any necessary measures taken (e.g., personal protective equipment (PPE) is provided/worn) before an employee enters a space or area that meets the following criteria: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 68</i>] – Air contaminants, oxygen deficiency or other dangerous atmospheric conditions may occur; and/or – Air is readily ignitable? VI. Building and Civil Engineering Work - Safety Measures Comments:				

	Not Applicable	Complies	Does Not Comply
Q17.110 Are employees working in confined spaces watched from outside and are appropriate precautions taken to ensure that they can be assisted quickly and effectively if the confined space meets the following criteria: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 69</i>] – Air contaminants, oxygen deficiency or other dangerous atmospheric conditions may occur; and/or – Air is readily ignitable? See protocol for notes. VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.111 If the site includes limited access areas, are they equipped with devices to prevent unauthorized access, and are appropriate measures taken to protect authorized employees who enter these areas? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 70</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.112 Are dangerous areas clearly signposted? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 70</i>] VI. Building and Civil Engineering Work - Safety Measures Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.113 Are the following types of PPE made available to personnel and used: <i>[Building and Civil Engineering Work, AFS 1999:3, Section 71]</i> – Safety helmet with chin straps and safety shoes with penetration-resistant soles and toe caps, except where absolutely unnecessary; – Ice prods, ice crampons, life jacket and life line, for work on ice-covered water; and – Any other necessary PPE? VI. Building and Civil Engineering Work - Safety Measures Comments:			
Q17.114 Is earthwork planned and conducted in such a way that the stability of the ground is sufficient with regard to the loads to which it may be subjected and so that the risks of collapses, landslides, bottom heaves or other unplanned changes in the ground and flooding are prevented? <i>[Building and Civil Engineering Work, AFS 1999:3, Section 72]</i> VII. Building and Civil Engineering Work - Excavation and Demolition Comments:			
Q17.115 Before excavation begins, is an investigation made concerning the presence in the ground of the following: <i>[Building and Civil Engineering Work, AFS 1999:3, Section 73]</i> – Materials or substances dangerous to health; and/or – Installations, cables or other distribution systems? See protocol for notes. VII. Building and Civil Engineering Work - Excavation and Demolition Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.116 Are support structures used in connection with excavation, unless the risk of a collapse endangering health or safety is non-existent? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 74</i>] See protocol for notes. VII. Building and Civil Engineering Work - Excavation and Demolition Comments:			
Q17.117 Are excavated materials and other materials positioned so that they do not cause the following: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 75</i>] – Risk due to collapses, falling stones, etc.; and/or – Overloading of sheet piling, props and struts? See protocol for notes. VII. Building and Civil Engineering Work - Excavation and Demolition Comments:			
Q17.118 If there is a risk of injury resulting from falls into excavations and wells, are these provided with protective covering or are they closed off by guardrails? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 75</i>] VII. Building and Civil Engineering Work - Excavation and Demolition Comments:			

		Not Applicable	Complies	Does Not Comply
Q17.119 Are preventive measures taken to ensure that excavating and material-handling vehicles and machinery do not fall into the excavations or into water? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 75</i>] VII. Building and Civil Engineering Work - Excavation and Demolition Comments:				
Q17.120 Is excavation started and conducted only under the direction of a competent person in the following circumstances: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 76</i>] – If the investigation described in Question 17.115 reveals the presence of material or substances dangerous to health, installations, or cables or other distribution systems; and/or – If support structures or a slope gradient are needed (see Question 17.116)? See protocol for notes. VII. Building and Civil Engineering Work - Excavation and Demolition Comments:				
Q17.121 Before demolition work begins, is an investigation carried out to ascertain whether materials or substances dangerous to health are present in the building or civil engineering works? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 78</i>] See protocol for notes. VII. Building and Civil Engineering Work - Excavation and Demolition Comments:				

		Not Applicable	Complies	Does Not Comply
Q17.122 Is demolition of load-bearing structures or demolition involving materials or substances dangerous to health planned and undertaken only under the direction of a competent person who provides continuous observation and supervision? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 79</i>] See protocol for notes. VII. Building and Civil Engineering Work - Excavation and Demolition Comments:				
Q17.123 Are demolition and boring activities carried out in such a way that the strength and stability of remaining parts of the building or civil engineering works are not endangered? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 80</i>] VII. Building and Civil Engineering Work - Excavation and Demolition Comments:				
Q17.124 Does the facility ensure that building parts constituting support for other parts are not demolished until sufficient anchoring or bracing has taken place? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 80</i>] VII. Building and Civil Engineering Work - Excavation and Demolition Comments:				

		Not Applicable	Complies	Does Not Comply
Q17.125 If a risk of collapse, overturning or falling objects arises during demolition work, is the danger area immediately evacuated and closed off? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 80</i>] VII. Building and Civil Engineering Work - Excavation and Demolition Comments:				
Q17.126 Does the facility ensure that the machine operator is very familiar with the type of work for the following types of demolition: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 80</i>] – Demolition using an excavator or mobile crane; and – Demolition using a wrecking ball or by a ball fitted to the arm of the excavator or to the crane rope? VII. Building and Civil Engineering Work - Excavation and Demolition Comments:				
Q17.127 Is building and civil engineering work planned, arranged and undertaken to afford adequate safety against injuries and accidents from passing vehicular traffic? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 81</i>] See protocol for notes. VIII. Building and Civil Engineering Work - Passing Vehicular Traffic Comments:				

	Not Applicable	Complies	Does Not Comply
Q17.128 Are risks due to passing vehicular traffic prevented by taking the measures listed below, in the order given: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 81</i>] – Traffic is diverted so that work is not affected; – Traffic is directed so that vehicles pass by at a safe distance; or – Traffic is segregated from the worksite by means of traffic control devices, and, to the extent necessary, by protective devices excluding or diverting traffic from the worksite? VIII. Building and Civil Engineering Work - Passing Vehicular Traffic Comments:			
Q17.129 Are the following measures also considered, either separately, in combination with each other, or in combination with the measures in the second and third bullets in Question 17.128: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 81</i>] – Reducing the speed of the traffic past the worksite by means of road signs, road markings or another appropriate measures; and/or – Directing traffic past the worksite by means of a specially appointed signalman or by means of traffic signals? VIII. Building and Civil Engineering Work - Passing Vehicular Traffic Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.130 Are traffic control devices and protective devices positioned and weighted or anchored in such a way that they cannot be ejected into the worksite by passing vehicles? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 81</i>] VIII. Building and Civil Engineering Work - Passing Vehicular Traffic Comments:			
Q17.131 In applying the requirements of Question 17.127 through Question 17.130 to work in a track area with track-bound traffic passing by, is special care taken to ensure that the work is planned, arranged and undertaken to offer adequate safety against injuries and accidents from this traffic? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 82</i>] VIII. Building and Civil Engineering Work - Passing Vehicular Traffic Comments:			
Q17.132 If a vehicle must pass through the place where the work is being undertaken and the employees, for safety reasons, must therefore leave their workstations, are measures taken to ensure that the employees have vacated the workstations before the vehicle passes? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 83</i>] VIII. Building and Civil Engineering Work - Passing Vehicular Traffic Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.133 If necessary, are special protective devices provided to protect employees from exposure to noise, vibration, or air pollution from passing vehicular traffic? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 84</i>] VIII. Building and Civil Engineering Work - Passing Vehicular Traffic Comments:			
Q17.134 Are high-visibility clothes with reflectors provided to workers for the following tasks and in the following situations: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 85</i>] – The worksite is not segregated from passing vehicular traffic by protective devices effectively excluding or diverting traffic from the worksite; and/or – Workers serving as signalmen are employed at the worksite, with the task of directing the traffic and/or ensuring that employees leave the danger area when a vehicle approaches? VIII. Building and Civil Engineering Work - Passing Vehicular Traffic Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.135 Is work started and undertaken only under the direction of a competent person in the following cases: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 86</i>] – It is intended that the risks due to traffic will be prevented through the measures described in the third bullet to Question 17.128; and/or – The work is concerned with the maintenance and repair of tracks with passing vehicular traffic? See protocol for notes. VIII. Building and Civil Engineering Work - Passing Vehicular Traffic Comments:			
Q17.136 When building products and other materials or materials with large surface areas are deposited on a roof or in other places at height, is the impact of wind taken into account? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 56</i>] See protocol for notes. IX. Building and Civil Engineering Work - Work at Heights Comments:			
Q17.137 Is the risk of an employee falling to a lower level prevented, where necessary, by guardrails, work platforms, scaffolding or work baskets? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 57</i>] IX. Building and Civil Engineering Work - Work at Heights Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.138 Do guardrails meet the following requirements: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 57</i>] – Are of an appropriate strength and height; – Have at least a toeboard, a principal guardrail and an intermediate guardrail, or afford corresponding protection; and – Are completely enclosed if loose objects may cause injury when falling through the guardrails? IX. Building and Civil Engineering Work - Work at Heights Comments:			
Q17.139 If guardrails or other equipment described in Question 17.137 cannot be used, is personal fall protection equipment provided to workers? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 58</i>] IX. Building and Civil Engineering Work - Work at Heights Comments:			
Q17.140 If necessary, is an access route to areas with a risk of falls suitably arranged and, if unauthorized employees can enter the fall risk area, is it demarcated and closed off? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 58</i>] IX. Building and Civil Engineering Work - Work at Heights Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.141 For work on roofs, is special account taken of the risk of accidents resulting from the following: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 87</i>] – Falls, treading through materials, slipping and tripping; and – Unsuitable work postures and working movements? See protocol for notes. IX. Building and Civil Engineering Work - Work at Heights Comments:			
Q17.142 Are materials and tools placed on roofs so that they cannot slide down, and are materials appropriately secured, if necessary? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 87</i>] IX. Building and Civil Engineering Work - Work at Heights Comments:			
Q17.143 For work on roofs, are the following requirements met: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 88</i>] – Permanently fitted equipment, a guardrail or other equipment affording corresponding protection, is used; or – If it is not reasonable under the circumstances to use a guardrail or other equipment offering corresponding protection, personal fall protection equipment is used? See protocol for notes. IX. Building and Civil Engineering Work - Work at Heights Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.144 If fall protection is used with a safety line, is the safety line secured to an appropriate device on the roof (e.g., a ridge rail)? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 89</i>] See protocol for notes. IX. Building and Civil Engineering Work - Work at Heights Comments:			
Q17.145 For work on roofs with more than a 1:4 (approximately 14 degrees) gradient, is a horizontal work surface provided if the work is done in a small area and if it is expected to last for more than 4 hours? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 90</i>] IX. Building and Civil Engineering Work - Work at Heights Comments:			
Q17.146 Before repair or maintenance work on a roof begins, is the state of the roof investigated, particularly with regard to its load-bearing capacity and surface roughness? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 91</i>] IX. Building and Civil Engineering Work - Work at Heights Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.147 In the construction of roofs with self-supporting sheeting on roof beams, are the following requirements met: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 92</i>] – The weight of the sheeting packages is adapted to the load-carrying capacity of the roof; – The packages are distributed on the roof at appropriate intervals to facilitate handling; – The first sheets on the roof are laid from a scaffolding, work platform or other safe position; and – Each sheet is secured immediately after it is laid out? IX. Building and Civil Engineering Work - Work at Heights Comments:			
Q17.148 Are the manufacturer's instructions taken into account when safety nets are used? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 96</i>] See protocol for notes. IX. Building and Civil Engineering Work - Work at Heights Comments:			
Q17.149 Are safety nets assembled only under the supervision of a competent person, and with the aim of minimizing the falling height? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 96</i>] See protocol for notes. IX. Building and Civil Engineering Work - Work at Heights Comments:			

		Not Applicable	Complies	Does Not Comply
Q17.150 Is the clearance under the net sufficient to ensure that a person falling into the net will not be injured by contact with any object underneath the net? <i>[Building and Civil Engineering Work, AFS 1999:3, Section 96]</i> IX. Building and Civil Engineering Work - Work at Heights Comments:				
Q17.151 Is a safety net which has caught a falling person (or an object which may have imposed the corresponding stress) used only if it has subsequently been examined and found to be in working order by a competent person? <i>[Building and Civil Engineering Work, AFS 1999:3, Section 97]</i> See protocol for notes. IX. Building and Civil Engineering Work - Work at Heights Comments:				

	Not Applicable	Complies	Does Not Comply
Q17.152 After the date indicated in the manufacturer's instructions as the latest date upon which a test rope may be test-pulled, is a safety net with one or more test ropes used only if the following requirements are met: [<i>Building and Civil Engineering Work, AFS 1999:3, Section 98</i>] – The test rope has been test-pulled; – An assessment of the test results in accordance with the instructions has shown that the net still provides adequate protection; – An assessment of the test results in accordance with the instructions has shown that the net still provides adequate protection until the next test-pull, or the date after which the net no longer provides adequate protection has been determined in accordance with the instructions; and – The test-pull, assessment and determination were conducted by a competent person? See protocol for notes. IX. Building and Civil Engineering Work - Work at Heights Comments:			
Q17.153 For work in temperatures below -10 degrees C, are safety nets chosen to ensure they contain material which retains its energy absorption capacity at the temperature concerned? [<i>Building and Civil Engineering Work, AFS 1999:3, Section 100</i>] IX. Building and Civil Engineering Work - Work at Heights Comments:			

	Not Applicable	Complies	Does Not Comply
Q17.154 During demolition work with materials that consist of synthetic inorganic fibers, does the employer use appropriate work methods and take safety precautions? [<i>Synthetic Inorganic Fibers, AFS 2004:1, Section 8</i>] See protocol for notes. X. Demolition Work Involving Synthetic Inorganic Fibers Comments:			

18.0 EH&S TRAINING

Facility Name: Date of Assessment:

Team Members:

Period Under Review:

This protocol is intended as a guide for planning and conducting the general aspects of an EH&S audit or self-assessment. It may require additions, revisions, or other modifications in order to meet the needs of facility-specific assessment objectives, industrial setting, or other special circumstances.

Key topics covered in this protocol section include the following:

- I. Solid and Hazardous Waste [18-9](#)
- II. General Health and Safety..... [18-9](#)
- III. Equipment, Machine and Electrical Safety..... [18-12](#)
- IV. Material Handling and In-Plant Safety [18-12](#)
- V. Fire Safety [18-14](#)
- VI. Transport of Dangerous Goods..... [18-16](#)
- VII. Industrial Hygiene [18-18](#)
- VIII. Chemical Management..... [18-22](#)
- IX. Construction Work Site Safety [18-25](#)

Tables or Appendices referenced in the protocol are located at the end of this section, along with a link to our audit scorecard, entitled [Audit Quick Check](#). This protocol applies to facilities located throughout Thailand.

Key Legislation and Regulations

Key legislation and regulations covered in this protocol are noted as follows:

- **Atomic Energy for Peace Act B.E. 2504 (พระราชบัญญัติพลังงานปรมาณูเพื่อสันติ พ.ศ. 2504), October 22, 1965.** Under this Act, any facility that imports, exports, uses, possesses or chemically transforms atomic energy, source materials or special nuclear materials must obtain a license from the Atomic Energy Commission.

- **Ministerial Regulation No. 5 B.E. 2516 (กฎกระทรวง ฉบับที่ ๕ (พ.ศ. ๒๕๑๖) ออกตามความในพระราชบัญญัติพลังงานปรมาณูเพื่อสันติ พ.ศ. ๒๕๐๔), August 1, 1973.** This Regulation, issued under the [Atomic Energy for Peace Act B.E. 2504](#), amends the definition of source material of radioactive substances prescribed in *Ministerial Regulation No. 1 B.E. 2504*.
- **Notification of the Ministry of Interior Re: Electrical Safety (ประกาศกระทรวงมหาดไทย เรื่อง ความปลอดภัยในการทำงานเกี่ยวกับไฟฟ้า), March 8, 1979.** This Notification establishes equipment design and employee safety standards for protection against exposure to electricity.
- **Notification of the Ministry of Industry No. 24 B.E. 2530 (1987) Issued Under the Factory Act B.E. 2512 (1969) Re: Duties of the Holder of a Factory Business Operation License (ประกาศกระทรวงอุตสาหกรรม ฉบับที่ 24 (พ.ศ. 2530)), June 1, 1987.** This Notification imposes duties on the factory license holder to provide safety measures and safety protective equipment to prevent hazards from working with toxic, chemical, explosive and other substances.
- **Notification of the Ministry of Interior Re: Working Safety Relating to Protection and Prevention of Fire for Employees (ประกาศกระทรวงมหาดไทย เรื่อง การป้องกันและระงับอัคคีภัยในสถานประกอบการ เพื่อความปลอดภัยในการทำงานสำหรับลูกจ้าง), November 21, 1991.** This Notification requires the facility to develop a fire protection and prevention plan and to provide and maintain fire suppression and fire fighting equipment. Requirements for the storage of combustible and flammable or explosive materials, as well as gas cylinders, are also defined.
- **Hazardous Substance Act B.E. 2535 (พระราชบัญญัติวัตถุอันตราย พ.ศ. 2535), April 6, 1992.** This Act defines the authority of the Ministry of Industry to promulgate notifications concerning storage, manufacturing, importation, exportation and permitting requirements.
- **Ministerial Regulation No. 2 B.E. 2535 Issued Under the Factory Act B.E. 2535 (กฎกระทรวงฉบับที่ 2 (พ.ศ. 2535) ออกตามความในพระราชบัญญัติโรงงาน พ.ศ. 2535), September 24, 1992.** This Regulation establishes requirements with respect to safety measures regarding factory operations including emergency egress and lightning protection.

- **Ministerial Regulation B.E. 2537 Issued Under the Hazardous Substance Act B.E. 2535 (กฎกระทรวง (พ.ศ. 2537) ออกตามความใน พ.ร.บ. วัตถุอันตราย พ.ศ. 2535 เรื่อง ขออนุญาตผลิต นำเข้า ส่งออก หรือมีไว้ในครอบครองซึ่งวัตถุอันตราย), October 27, 1994.** This Notification establishes requirements for permitting, storage, facility construction/location, importation, exportation, disposal of hazardous substances (including wastes), and employee safety.
- **Notification of the Ministry of Industry Re: Prescriptions of Factory Types and Sizes, Procedures for the Control of Discharges of Wastes, Pollutants, or any Substances that Cause Adverse Effects on the Environment; Qualifications of Supervisors and Operators; and Criteria for Registration of the Supervisors of Pollution Prevention Systems B.E. 2545 (2002) (ประกาศกระทรวงอุตสาหกรรม เรื่อง การกำหนดชนิดและขนาด ของโรงงาน กำหนดวิธีการควบคุมการปล่อยของเสีย มลพิษ หรือสิ่งใดๆ ที่มีผลกระทบต่อสิ่งแวดล้อม กำหนดคุณสมบัติของผู้ควบคุมดูแลผู้ปฏิบัติงานประจำ และหลักเกณฑ์การขึ้นทะเบียน ผู้ควบคุมดูแล สำหรับระบบป้องกันสิ่งแวดล้อมเป็นพิษ พ.ศ. 2545), May 7, 2002.** This Notification requires specific types of factories to provide registered environmental personnel and to submit applications for permission to have environmental personnel.
- **Notification for the Resolution of the Hazardous Substance Commission Re: Transportation of Hazardous Substances on Land B.E. 2545 (ประกาศมติดคณะกรรมการ วัตถุอันตราย เรื่อง การขนส่งวัตถุอันตรายทางบก พ.ศ. ๒๕๔๕), August 15, 2002.** This Notification provides requirements for transport of hazardous substances, including general packaging, testing procedures for containers, labeling, marking or placarding, training and transport documents.
- **Ministerial Regulation Re: Prescription of the Conditions and Procedures to Receive and Issue Licenses Pursuant to Atomic Energy for Peace Act B.E. 2504 (B.E. 2546) (กฎกระทรวงกำหนดเงื่อนไขและวิธีการขอรับใบอนุญาตและการออกใบอนุญาตตามพระราช บัญญัติพลังงานปรมาณูเพื่อสันติ พ.ศ. 2504 พ.ศ. 2546), March 26, 2003.** This Notification establishes standards for the management of radioactive substances addressed in the [Ministerial Regulation Re: License Pursuant to Atomic Energy B.E. 2546.](#)
- **Notification of the Office of Atoms for Peace Re: Regulations and Measures Issued Under the Ministerial Regulation Re: Prescription of the Conditions and Procedures to Receive and Issue Licenses Pursuant to Atomic Energy for Peace Act B.E. 2504 (B.E. 2546) (ประกาศคณะกรรมการพลังงานปรมาณูเพื่อสันติ เรื่อง ข้อกำหนดและมาตรการอ ออกตามความกฎกระทรวงกำหนดเงื่อนไขและวิธีการขอรับใบอนุญาตและการออกใบอนุญาตด ตามพระราชบัญญัติพลังงานปรมาณูเพื่อสันติ พ.ศ. 2504 พ.ศ. 2546), July 29, 2003.** This Notification establishes standards for the management of radioactive substances addressed in the [Ministerial Regulation Re: License Pursuant to Atomic Energy B.E. 2546.](#)

- **Notification of the Ministry of Industry Re: Measures for Safety Protection Concerning Performance of Works in Operating Factories B.E. 2546 (2003) (ประกาศกระทรวงอุตสาหกรรม เรื่อง มาตรการคุ้มครองความปลอดภัยในการดำเนินงาน พ.ศ. 2546), November 11, 2003.** This Notification establishes the safe level of working conditions such as the maximum heat level, maximum noise level and minimum lighting for specified types of factories.
- **Ministerial Regulation Re: Prescribing Standards for the Management of Safety, Occupational Health and Working Environments Related to Confined Space Work B.E. 2547 (2004) Issued Under the Labor Protection Act B.E. 2541 (กฎกระทรวง กำหนดมาตรฐานในการบริหาร และการจัดการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงานในที่อับอากาศ พ.ศ. 2547), June 10, 2004.** This Regulation establishes standards for training and safety procedures prior to conducting work in confined spaces. This Regulation also establishes standards for conducting air monitoring, personal protective equipment, and labeling required for confined spaces.
- **Ministerial Regulation Re: Prescribing Safety Management, Occupational Health and Environment Standards for a Workplace Dealing with Ionizing Radiation B.E. 2547 (กฎกระทรวง เรื่อง กำหนดมาตรฐานในการบริหารและการจัดการด้านความปลอดภัย อาชีวอนามัยและสภาพแวดล้อมในการทำงานเกี่ยวกับรังสีชนิดก่อกัมมันตภาพรังสี พ.ศ. ๒๕๔๗ (ราชกิจจานุเบกษา เล่มที่ ๑๒๑ ตอนที่ ๕๒ก วันที่ ๒๐ สิงหาคม ๒๕๔๗)), August 20, 2004.** This Notification sets forth standards for safety management, occupational health and the environment for workplaces using ionizing radiation. The Notification provides requirements for control and prevention of hazards, marking, labeling and alarms, notification, reporting and personal safety protection.
- **Regulation of the Department of Labor Protection and Welfare on Training Standards of Safety Officer, Tests for Knowledge of Professional Safety Officer Program B.E. 2548 (ระเบียบกรมสวัสดิการและคุ้มครองแรงงาน ว่าด้วยมาตรฐานหลักสูตรการฝึกอบรมเจ้าหน้าที่ความปลอดภัยในการทำงานและการทดสอบการเรียนรู้ในหลักสูตรเจ้าหน้าที่ความปลอดภัยในการทำงานระดับวิชาชีพ พ.ศ. 2548), June 3, 2005.** This Regulation prescribes the training standards for Safety Officers at various levels. In addition, the Regulation provides for an examination to be taken for certification as a safety officer, professional level.
- **Notification of the Department of Labor Protection and Welfare Re: Rules and Procedures of Work Safety Training to Prevent Risks of Radiation (ประกาศกรมสวัสดิการและคุ้มครองแรงงาน เรื่อง กำหนดหลักเกณฑ์ วิธีการอบรมความปลอดภัยในการทำงานในการป้องกันอันตรายจากรังสี), October 21, 2005.** This Notification requires the employer to arrange for the employees working with radiation to have training concerning the dangers, and the procedures to prevent such dangers, arising from radiation.

- **Notification of the Department of Labor Protection and Welfare Re: Prescribing Conditions and Methods for Storage and Transport of Radioactive Source Material and Radioactive Waste Management (ประกาศกรมสวัสดิการและคุ้มครองแรงงาน เรื่อง กำหนดเงื่อนไขและวิธีการเก็บรักษา เคลื่อนย้าย ขนส่งต้นกำเนิดรังสี และการจัดการกากกัมมันตรังสี), October 21, 2005.** This Notification fulfills the safety requirements under Clause 15 of *Ministerial Regulation Re: Prescribing Safety Management, Occupational Health and Environment Standards for a Workplace Dealing with Ionizing Radiation B.E. 2547 (2004)* by prescribing safety procedures for the storage and transport of radioactive source material and radioactive waste.
- **Notification of the Ministry of Industry Re: Disposal of Wastes or Unusable Materials B.E. 2548 (ประกาศกระทรวงอุตสาหกรรม เรื่อง การกำจัดสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว พ.ศ. 2548), December 27, 2005.** This Notification prescribes the procedures for the disposal of wastes or unused materials in factories.
- **Ministerial Regulation Re: Prescribing Management Standards for Safety, Occupational Health and Environmental (SHE) Standards for Heat, Light and Noise in the Workplace B.E. 2549 (กฎกระทรวง กำหนดมาตรฐานในการบริหารและการจัดการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงานเกี่ยวกับความร้อน แสงสว่าง และเสียง พ.ศ. 2549), March 6, 2006.** This Regulation prescribes heat, light and noise safety requirements for the workplace.
- **Ministerial Regulation Re: Prescribing Safety, Occupational Health, and Workplace Environment Management Standards B.E. 2549 (กฎกระทรวง กำหนดมาตรฐานในการบริหารและการจัดการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน พ.ศ. 2549), May 16, 2006.** This Regulation sets forth a list of businesses, establishments, and management standards applicable to workplace safety, occupational health, and environment.
- **Notification of the Department of Labor Protection and Welfare Re: Criteria and Procedures for Training Safety Officers (ประกาศกรมสวัสดิการและคุ้มครองแรงงานเรื่อง หลักเกณฑ์และวิธีการฝึกอบรม เจ้าหน้าที่ความปลอดภัยในการทำงาน), October 19, 2006.** This Notification prescribes the qualifications of those who attend the safety training program or training course, certificate evaluation procedures, and the organizations responsible for providing the training.
- **By-Law of the Department of Labor Protection and Welfare Re: Training Course for Safety Officers (ระเบียบกรมสวัสดิการและคุ้มครองแรงงาน ว่าด้วยหลักสูตรการฝึกอบรมเจ้าหน้าที่ความปลอดภัยในการทำงาน พ.ศ. 2549), November 16, 2006.** This By-Law specifies the coursework for the safety training program for 5 levels of safety officers: supervisor, technical, higher technical, professional, and managerial levels.

- Notification of the Department of Labor Protection and Welfare Re: Prescribing Procedure and Safety Training Course Related to Confined Space Work B.E. 2549 (2006) (ประกาศกรมสวัสดิการและคุ้มครองแรงงาน เรื่อง หลักเกณฑ์ วิธีการ และหลักสูตรการฝึกอบรมความปลอดภัยในการทำงานในที่อับอากาศ พ.ศ. 2549), November 30, 2006. This Notification provides the training course outline and requirements for employees who work in confined spaces.
- Notification of the Ministry of Industry Re: Criteria, Procedures, and Training for the Issuance of a Certificate of Approval and the Registration to be a Gas Controller, Gas Transporter, or Gas Filler in a Factory B.E. 2549 (2006) (ประกาศกระทรวงอุตสาหกรรม เรื่อง หลักเกณฑ์ วิธีการ การฝึกอบรม การออกหนังสือรับรองและการขึ้นทะเบียนเป็นคณานควมคุม ส่งและบรรจุก๊าซประจำโรงงาน พ.ศ. 2549), December 4, 2006. This Notification prescribes the requirements for workers using, keeping, transporting, and filling gas in a factory. The Notification also provides approval procedures for gas controllers, gas transporters, and gas fillers in a factory.
- Notification of the Department of Labor Protection and Welfare Re: Criteria and Procedures for Safety, Health and Environment Training for the Safety Health and Environment Work Committee (2006) (ประกาศกรมสวัสดิการและคุ้มครองแรงงานเรื่อง หลักเกณฑ์และวิธีการอบรมคณะกรรมการความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงานของสถานประกอบกิจการ พ.ศ. 2549), December 21, 2006. This Notification prescribes the criteria and procedures for the Safety, Health and Environment (SHE) Work Committee as required by [Ministerial Regulation Re: Safety Health and Environment Management Standards](#).
- Ministerial Regulation Re: Prescribed Conditions and Procedures for Obtaining Licenses and Operating with Special Nuclear Materials, Source Materials, By-Product Materials or Atomic Energy B.E. 2550 (2007) (กฎกระทรวง กำหนดเงื่อนไข วิธีการขอรับใบอนุญาต และการดำเนินการเกี่ยวกับวัสดุนิวเคลียร์พิเศษ วัสดุต้นกำลัง วัสดุพลอยได้ หรือพลังงานปรมาณู พ.ศ. 2550), August 17, 2007. This Notification requires facilities that intend to import, store, possess, transport, produce or dispose of special nuclear material, source material, by-products or atomic energy to obtain a permit from the Office of Atoms for Peace.
- Notification of the Department of Energy Business Re: Criteria, Procedures, and Training for Responsible Operators of Gas Stations, Gas Storage Facilities, or Liquefied Petroleum Gas Transportation Facilities B.E. 2550 (2007) (ประกาศกรมธุรกิจพลังงาน เรื่องหลักเกณฑ์ วิธีการ และเงื่อนไขการฝึกอบรมบุคลากรที่รับผิดชอบดูแลร้านจำหน่ายก๊าซ โรงเก็บก๊าซ หรือการขนส่งก๊าซปิโตรเลียมเหลว พ.ศ. 2550), December 20, 2007. This Notification prescribes the provisions of the training course for the operators of gas stations, gas storage areas, or liquefied petroleum gas (LPG) transportation facilities.

- **Notification of the Department of Labor Protection and Welfare Re: Prescription and Procedures of Safety Training Course for Managers of Safety Departments B.E. 2551 (2008)** (ประกาศกรมสวัสดิการและคุ้มครองแรงงานเรื่อง หลักเกณฑ์และวิธีการอบรมหัวหน้าหน่วยงานความปลอดภัย พ.ศ. 2551), *March 28, 2008*. This Notification describes the requirements and qualifications of the safety department manager.
- **Ministerial Regulation Re: Prescribing Safety, Occupational Health, and Workplace Environment Management Standards of Construction Works B.E. 2551 (กฎกระทรวงกำหนดมาตรฐานในการบริหารและการจัดการด้านความปลอดภัย อาชีวอนามัย และ สภาพแวดล้อมในการทำงานเกี่ยวกับงานก่อสร้าง พ.ศ. 2551)**, *October 16, 2008*. This Regulation establishes new construction work safety standards. These safety standards cover work at heights, scaffolding, lifts and cranes, etc. This Regulation replaces 5 construction- related regulations, including the following: *Notification of the Ministry of Interior Re: Safety in Construction Work Concerning Construction Areas*, *Notification of the Ministry of Interior Re: Safety in Construction Work Concerning Temporary Lifts*, *Notification of the Ministry of Interior Re: Safety in Performance of Work Concerning Pile Driving*, *Notification of the Ministry of Interior Re: Safety in Performance of Work in Place with Dangers of Falling from High Places, Falling Materials and Collapse* and *Notification of the Ministry of Interior Re: Working Safety in Construction Work Relating to Scaffolding*.
- **Ministerial Regulation Re: Prescribing Safety, Occupational Health, and Workplace Environment Management Standards for Machines, Cranes and Boilers B.E. 2552 (2009)** (กฎกระทรวง กำหนดมาตรฐานในการบริหารและการจัดการด้านความปลอดภัย อาชีวอนามัยและสภาพแวดล้อมในการทำงานเกี่ยวกับเครื่องจักร ปั่นจั่น และหม้อน้ำ พ.ศ. 2552), *June 11, 2009*. This Regulation repeals the *Notification of the Ministry of Interior Re: Safety in Performance of Boiler Work (1991)* and the *Notification of the Ministry of Interior Re: Safety in Working with Machinery (1976)*. It establishes safe work requirements with regard to machines, including metal pressing machines, electric and gas welders, forklifts, elevators, overhead hoists and cranes, boilers and the use of personal protection equipment (PPE).
- **Notification of the Ministry of Industry Re: Fire Prevention and Suppression in Factories BE 2552 (2009)** (ประกาศกระทรวงอุตสาหกรรม เรื่อง การป้องกันและระงับอัคคีภัย ในโรงงาน พ.ศ. 2552), *September 30, 2009*. This Notification defines specifications for fire alarms, portable fire extinguishers, fire sprinklers, automatic fire sprinkler systems, and equipment inspection and maintenance.

- **Notification of the Department of Labor Protection and Welfare Re: Criteria and Methods for Notifying or Submitting the Report Related to Safety, Occupational Health and Workplace Environment Management Standards via an Electronic System B.E. 2553 (ประกาศกรมสวัสดิการและคุ้มครองแรงงาน เรื่อง หลักเกณฑ์และวิธีการแจ้งการดำเนินการหรือส่งเอกสารตามมาตรฐานในการบริหารและการจัดการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงานทางสื่ออิเล็กทรอนิกส์ พ.ศ. 2553), March 17, 2010.** This Notification establishes criteria for reports submitted to the Director of Labor Protection and Welfare Department, or an authorized officer, via an electronic system.
- **Notification of the Department of Labor Protection and Welfare Re: Criteria and Method of Preparing a Hearing Conservation Program in Workplace B.E. 2553 (2010) (ประกาศกรมสวัสดิการและคุ้มครองแรงงาน เรื่อง หลักเกณฑ์และวิธีการจัดทำโครงการอนุรักษ์การได้ยินในสถานประกอบกิจการ พ.ศ. 2553), May 20, 2010.** This Notification establishes requirements for workplace hearing conservation programs.

This protocol section updates information contained in the prior version (2008). Specific additions, deletions and other changes made relative to the earlier version of the protocol are summarized in Appendix 18-A.

Topics and Questions

I. Solid and Hazardous Waste

- 18.1** If the facility generates waste and unusable materials, does it provide waste supervisor training to environmental personnel involved in these activities to ensure that the work is performed correctly? [[Notification Re: Disposal of Wastes or Unusable Materials B.E. 2548, Section 2, Clause 7](#)]

Notes: “Environmental personnel” means a person, such as waste supervisor, wastewater supervisor, etc., who is in charge of activities concerning pollution prevention systems in a factory. [[Notification Re: Environmental Supervisor, Clause 1](#)]

- 18.2** Does the facility provide training and information to employees regarding the dangers of the hazardous substances (including wastes) in the workplace? [[Ministerial Regulation B.E. 2537, Clause 21](#)]

II. General Health and Safety

- 18.3** If the facility has 50 or more employees and it has established a Safety, Health and Environment Work Committee (as specified in Section 10.0 of this protocol), does it ensure that its safety officers are trained on safety in the working environment according to the criteria defined by Director-General of Welfare and Labor Protection Department (hereafter the “Director-General”) as follows: [[Regulation Re: Training Standards of Safety Officers, Section 1, Clause 6; Section 2, Clause 7; Section 3, Clause 8 and Section 4, Clause 9](#)]; [[By-Law Re: Training Course for Safety Officers, Section 1, Clause 4; Section 2, Clause 5; Section 3, Clause 6; Section 4, Clauses 4 and 7 and Section 5, Clause 8](#)] and [[Notification Re: Criteria and Procedures for Training Safety Officers, Section 2, Clauses 9-10](#)]

- 30 hours for safety officers at a fundamental level;
- 12 hours for safety officers at a supervisor level;
- 18 hours for safety officers at technical level;
- 18 hours for safety officers at higher technical level;
- 12 hours for safety officers at a managerial level; and
- 192 hours and 30 days of practical experience in the facility for safety officers at a professional level?

Notes: The criteria and procedures for safety officer training are described in the [Notification Re: Criteria and Procedures for Training Safety Officers](http://www.ratchakitcha.soc.go.th/DATA/PDF/2549/D/111/11.PDF); see <http://www.ratchakitcha.soc.go.th/DATA/PDF/2549/D/111/11.PDF> (last accessed in August 2010). Additional details about the training course are provided in the *By-Law Re: Safety Officer Training Course*; see <http://www.ratchakitcha.soc.go.th/DATA/PDF/2549/E/133/29.PDF> (last accessed in August 2010).

- 18.4** Does the facility ensure that the responsibilities of safety officers at the supervisor level, higher technical level and professional level include training employees on the procedures or instructions for work safety, to ensure that each employee can perform work correctly and according to the established procedures? [\[Ministerial Regulation Re: Safety Health and Environment Management Standards, Clauses 9, 15 and 18\]](#)

Notes: More information about safety officers at the supervisor level, higher technical level and professional level is provided in the Subsection entitled, “Work Safety Officers” in Section 10.0 of this protocol.

- 18.5** Does the facility ensure that its safety department provides training on work safety instructions to the following employees: [\[Ministerial Regulation Re: Safety Health and Environment Management Standards, Clauses 3, 5 and 34\]](#)

- New employees; or
- Existing employees who are re-assigned to perform work which may cause new adverse effects to the employees’ health?

- 18.6** Does the facility provide classroom training and on-the-job training to ensure that employees can perform work safely? [\[Ministerial Regulation Re: Safety Health and Environment Management Standards, Clause 3\]](#)

- 18.7** If the facility has a Safety, Health and Environment Work Committee, does it provide a training program covering the roles and responsibilities of this committee, as prescribed in Table 10-4 in Section 10.0 of this protocol? [\[Notification Re: SHE Training for SHE Committee, Clauses 3 and 4\]](#)

- 18.8** Does the facility provide the “Chief Safety Training Program” to its safety officers at the supervisor level, technical level, higher technical level and professional level, as prescribed in Table 10-5 in Section 10.0 of this protocol? [\[Notification Re: Safety Training Course for Manager of Safety Department, Clauses 3 and 4\]](#)

- 18.9** Are the members of the Safety, Health and Environment Work Committee trained for the roles and responsibilities defined by Labor Department (and described in Section 10.0 of this protocol) within 60 days of the establishment of the committee? [*Ministerial Regulation Re: Safety Health and Environment Management Standards, Clause 28*] and [*Notification Re: SHE Training for SHE Committee, Clause 3*]

Notes: The facility is responsible for providing the training. However, if the facility is unable to provide the training itself, it must ensure that the members of the committee receive the training from a third party provider that has been approved by the Department of Labor Protection and Welfare. [*Notification Re: SHE Training for SHE Committee, Clause 3*]

The training lasts for 12 hours and includes instruction on the following topics: [*Notification Re: SHE Training for SHE Committee, Clause 3*]

- Topic 1: Efficient management and performance of the Safety, Health and Environment Work Committee in the facility (3 hours);
- Topic 2: Work safety regulations and notifications (1.5 hours); and
- Topic 3: Roles and responsibilities of the Safety, Health and Environment Work Committee (7.5 hours).

Additional details of the Safety, Health and Environment Work Committee training are provided in the *Notification Re: SHE Training for SHE Committee*; see <http://www.ratchakitc ha.soc.go.th/DATA/PDF/2549/D/131/23.PDF> (last accessed in August 2010).

- 18.10** Does the facility submit the Safety, Health and Environment Work Committee training results to the Director-General of the Department of Labor Protection and Welfare or another authorized person (identified by the Department) within 30 days of the training? [*Notification Re: SHE Training for SHE Committee, Clause 7*]

Notes: The submittal letter must include the following details: [*Notification Re: SHE Training for SHE Committee, Clause 7*]

- Name and address of the facility;
- Training schedule and signature of the trainer for each topic (see the second note to Question [18.9](#)); and
- Copy of the certificate/certification document of each trained committee member.

III. Equipment, Machine and Electrical Safety

- 18.11** Does the facility ensure that workers who are assigned work in connection with a pressing machine, arc welder, gas welder, forklift, or any other machine which is of a hazardous nature, passes a training course to demonstrate their knowledge in the operation of the machine? [*Ministerial Regulation Re: Standards for Machines, Cranes and Boilers, Clause 9*]

Notes: The training must be according to the rules and procedures announced and prescribed by the Director-General. [*Ministerial Regulation Re: Standards for Machines, Cranes and Boilers, Clause 9*]

The Regulation does not identify who must provide the training.

- 18.12** Have all employees who work with electricity been given training related to the following: [*Notification Re: Electrical Safety, Clause 83*]
- Procedures to follow if an employee is exposed to electricity; and
 - First aid, mouth-to-mouth resuscitation and CPR?

IV. Material Handling and In-Plant Safety

- 18.13** Does the facility ensure that only persons who are trained on the requirements in the *Notification of Labor Protection and Welfare Department Re: Prescribing Procedure and Safety Training Course Related to Confined Space Work, 2006* are allowed to work in or enter into a confined space? [*Ministerial Regulation Re: Confined Space B.E. 2547, Clauses 4-5*]

Notes: A “confined space” means any work area with limited entrances or exits, where the natural air ventilation does not meet hygiene or safety standards, and where there is an accumulation of toxic chemicals or flammable substances and insufficient oxygen. Examples of confined spaces include oil drums, fermentation tanks, silos, pipes, furnaces, wells, tunnels, underground areas, etc. [*Ministerial Regulation Re: Confined Space B.E. 2547, Clause 1*]

The *Notification of Labor Protection and Welfare Department Re: Prescribing Procedure and Safety Training Course Related to Confined Space Work, 2006* (ประกาศกรมสวัสดิการและคุ้มครองแรงงาน เรื่อง หลักเกณฑ์ วิธีการ และหลักสูตรการฝึกอบรมความปลอดภัยในการทำงานในที่อับอากาศ พ.ศ. 2549), establishes the training course outline and requirements for employees whose work is related to confined spaces. It may be accessed at: <http://www.ratchakitcha.soc.go.th/DATA/PDF/2549/D/125/55.PDF> (last accessed in October 2010).

Additional requirements for confined space work are outlined in the Subsection entitled, "Confined Spaces" in Section 12.0 of this protocol.

18.14 Does the facility provide the training prescribed in Table [18-1](#) to the following employees: [\[Ministerial Regulation Re: Confined Space B.E. 2547, Clause 21\]](#) and [\[Notification Re: Confined Space Training Course B.E. 2549, Clauses 4-15\]](#)

- Employees who are responsible for approving confined space work permits;
- Supervisors of confined space work;
- Life supporters of employees who work in confined spaces;
- Employees who work in confined spaces; and
- Any employees who are able to respond for all four tasks described above (substituting for an approver, supervisor, life supporter, or confined space worker)?

18.15 Does the facility retain confined space training records at the facility, including the attendee training list, the date and time of the training, and the name of trainer? [\[Notification Re: Confined Space Training Course B.E. 2549, Clause 25\]](#) and [\[Ministerial Regulation Re: Confined Space B.E. 2547, Clauses 6 and 20\]](#) **<RECORD KEEPING>**

18.16 Does the facility submit confined space training results to the Director-General of the Department of Labor Protection and Welfare at least once a year with the following details: [\[Notification Re: Confined Space Training Course B.E. 2549, Clause 26\]](#) and [\[Notification of Labor Protection and Welfare Re: Electronic Report Submission B.E. 2553, Clauses 3\(5\), 4 and 5\]](#)

- Training course title;
- Number of training attendees;

- Name of the trainer; and
- Date and time of the training?

Notes: The Notifications do not state specific date and time for employer to submit the training results to the Director-General of the Department of Labor Protection and Welfare.

The *Notification of Labor Protection and Welfare Re: Electronic Report Submission B.E. 2553* establishes a system for on-line registration and report submittal via the Department of Labor Protection and Welfare's website (<http://www.labour.go.th/> , last accessed in October 2010). The facility may also submit the training report by mail, facsimile or in-person. *[Notification of Labor Protection and Welfare Re: Electronic Report Submission B.E. 2553, Clauses 3(5), 4 and 5]*

- 18.17** Does the facility ensure that employees who operate a forklift pass a training course? *[Ministerial Regulation Re: Standards for Machines, Cranes and Boilers, Clause 36]*

Notes: The content of the course is as prescribed by the Director-General. *[Ministerial Regulation Re: Standards for Machines, Cranes and Boilers, Clause 36]*

- 18.18** Does the facility provide crane operators, crane signaling personnel, crane loading and unloading personnel and other persons who control the use of cranes, with an initial and periodic refresher training courses in relation to their duties, including the use, cleaning and maintenance of safety equipment related to operating cranes? *[Ministerial Regulation Re: Standards for Machines, Cranes and Boilers, Clause 65]*

Notes: Training is to be provided in accordance with the rules and procedures announced and prescribed by the Director-General. *[Ministerial Regulation Re: Standards for Machines, Cranes and Boilers, Clause 65]*

The Regulation does not identify who must provide the training.

V. Fire Safety

- 18.19** Has the facility developed a written fire protection and prevention plan that includes information about employee training? *[Notification Re: Fire Safety, Clauses 3 and 4]; [Ministerial Regulation No. 2 B.E. 2535, Clause 5]* and *[Notification Re: Fire Prevention and Suppression in Factories B.E. 2552, Clause 27]*

- 18.20** Have at least 40% of employees at the facility received annual fire fighting training from a local fire fighting authority or other competent training organization? [Notification Re: Fire Safety, Clauses 19(3) and 36]

Notes: Training may be provided by facility personnel or with assistance from the local fire response authority. [Notification Re: Fire Safety, Clause 36]

There must be employees at the facility during all work shifts who have received fire fighting training. [Notification Re: Fire Safety, Clause 20]

- 18.21** Does the facility provide evacuation training to employees at least once each year? [Notification Re: Fire Safety, Clauses 35 and 36]

Notes: Training may be provided by facility personnel, or with assistance from the local fire response authority. [Notification Re: Fire Safety, Clause 36]

- 18.22** If the facility is a factory with a high or moderate risk of fire (as indicated in the Subsection entitled, "Factories with a High or Moderate Risk of Fire" in Section 13.0 of this protocol), does it maintain documents pertaining to worker fire prevention and suppression training, and are these available for review by the competent authorities? [Notification Re: Fire Prevention and Suppression in Factories B.E. 2552, Clauses 16 and 17]

<RECORD KEEPING>

- 18.23** If the facility conducts fire evacuation training, is a written description of this training provided to the Director-General of the Labor Department for approval at least 30 days prior to conducting the training? [Notification Re: Fire Safety, Clause 36] and [Notification of Labor Protection and Welfare Re: Electronic Report Submission B.E. 2553, Clauses 3(4), 4 and 5]

Notes: The Notification of Labor Protection and Welfare Re: Electronic Report Submission B.E. 2553 establishes a system for on-line report submittal via the Department of Labor Protection and website (<http://www.labour.go.th/> , last accessed in October 2010). The facility may also submit the training report by mail, facsimile or in-person. [Notification of Labor Protection and Welfare Re: Electronic Report Submission B.E. 2553, Clauses 3(5), 4 and 5]

- 18.24** Are reports of all completed evacuation training (as described in Question 18.23) also provided to the Director-General within 30 days of having completed each training session? [Notification Re: Fire Safety, Clause 36] and [Notification of Labor Protection and Welfare Re: Electronic Report Submission B.E. 2553, Clauses 3(4), 4 and 5]

Notes: The [Notification of Labor Protection and Welfare Re: Electronic Report Submission B.E. 2553](#) establishes a system for on-line report submittal via the Department of Labor Protection and Welfare's website (<http://www.labour.go.th/> , last accessed in October 2010). The facility may also submit the training report by mail, facsimile or in-person. [\[Notification of Labor Protection and Welfare Re: Electronic Report Submission B.E. 2553, Clauses 3\(5\), 4 and 5\]](#)

- 18.25** If there is a risk of a moderate or serious fire at the facility, has the facility established a fire response team that has received training in fire prevention, use of fire equipment, first aid and emergency medical rescue? [\[Notification Re: Fire Safety, Clause 34\(2\)\]](#)

Notes: A “moderate fire” is a fire which generates smoke in moderate amounts and which does not cause a risk of poisoning or explosion. Areas that pose a “serious” risk of fire are those where materials or liquids may be consumed by fire quickly, or that may result in poisonous smoke or explosion. [\[Notification Re: Fire Safety, Clause 2\]](#)

The Notification does not provide further clarification regarding moderate smoke levels.

VI. Transport of Dangerous Goods

- 18.26** If the facility transports hazardous substances, are employees involved in the transport of dangerous goods, including drivers, trained in the following subjects and provided with refresher training every 3 years: [\[Ministerial Regulation B.E. 2537, Clause 19\]](#) and [\[Notification for the Resolution of the Hazardous Substance Commission\]](#)

- Characteristics of hazardous substances/dangerous goods;
- Classification and labeling of hazardous substances/dangerous goods;
- Emergency protection and emergency response;
- Procedures for self-protection and environmental pollution prevention;
- Packaging, loading and transport of dangerous goods, including possible chemical reactions between different dangerous goods when packed together;
- Affixing of placards or labels to tanks/containers on vehicles;
- Loading and unloading procedures for tanks;

- Responsibilities of various personnel with regard to the transport of dangerous goods;
- Safety driving procedures, including the proper driving speed; and
- Reporting procedures and information, should any accident or emergency occur?

Notes: “Hazardous substances” are defined as explosives, flammable substances, oxidizing agents, peroxides, toxic substances, disease-causing substances, radioactive substances, mutagenic substances, corrosives, irritants, or other substances dangerous to humans, animals, plants, property, or the environment. [[Hazardous Substance Act B.E. 2535, Section 4](#)]

Hazardous substances are classified into four categories based on the level of control needed to protect living things, property or the environment, as follows: Type 1, Type 2, Type 3 or Type 4. See the introductory notes to the Subsection entitled, “Manufacture, Import, Export or Possession of Hazardous Substances” in Section 16.0 of this protocol for additional information on the different regulatory requirements for hazardous substance by type. [[Hazardous Substance Act B.E. 2535, Section 18](#)]

18.27 If the facility transports hazardous substances, is the head of the department of the facility trained in the following topics and provided with refresher training every 3 years: [[Notification for the Resolution of the Hazardous Substance Commission](#)]

- Dangers and risks of dangerous goods and hazardous substances;
- Regulations related to dangerous goods and hazardous substances; and
- Duties and responsibilities of each department of the facility involved in the transport of dangerous goods and hazardous substances?

Notes: The Notification does not state any specific department. According to in-country experts, “department” may refer to any department in the facility that is in charge of hazardous materials transport.

18.28 Does the facility provide training or inform employees who are responsible for moving or transporting radioactive source material of the following: [[Notification Re: Transport of Radioactive Material, Clause 6](#)]

- Work safety procedures for moving or transporting radioactive source material;

- Hazards of radioactive source material; and
- Prevention of the hazards of radioactive source material?

Notes: See the Subsection entitled, “Exposure to Radioactive Materials” in Section 15.0 of this protocol for definitions related to radioactive materials.

VII. Industrial Hygiene

18.29 If the heat level of a work area is more than the level shown in Table 15-1 in Section 15.0 of this protocol, does the facility carry out the following: [Notification Re: Safety Protection B.E. 2546, Section 1, Clauses 3-4] and [Ministerial Regulation Re: SHE for a Workplace Dealing with Heat, Light, and Noise, Section 1, Clause 4 and Section 4, Clauses 13-14]

- Provide training in the use and maintenance of personal protective equipment (PPE); and
- Set up a system of methodology or procedures on how to use the PPE?

18.30 Are employees who work with lethal chemicals trained or informed on the hazards of lethal chemicals? [Notification No. 24 Re: Duties of the Holder of a Factory Business Operation License B.E. 2530, Clause 64]

18.31 Does the facility provide training and information regarding the hearing conservation program to employees, and does the training include the following details and objectives: [Notification Re: Criteria and Method of Hearing Conservation Program B.E. 2553, Clauses 9 and 11]

- Understanding of, and emphasis on, hearing conservation program;
- Importance of audiometric testing;
- Noise hazards and prevention; and
- How to use PPE?

Notes: Documents associated with the training must be retained at the facility for at least five years. [Notification Re: Criteria and Method of Hearing Conservation Program B.E. 2553, Clauses 9 and 11] <RECORD KEEPING>

“Employee,” in this question, refers to employees who are exposed to continuous sound levels of greater than 85 dB(A) for over 8 hours per day, as well as to other employees who work at the facility. [\[Notification Re: Criteria and Method of Hearing Conservation Program B.E. 2553, Clause 9\]](#)

Notes: The following definitions apply to the terms used in Question [18.32](#) through Question [18.40](#): [\[Atomic Energy for Peace Act B.E. 2504\]](#); [\[Ministerial Regulation No. 5 B.E. 2516\]](#) and [\[Ministerial Regulation Re: License Pursuant to Atomic Energy B.E. 2546\]](#)

- “Control area” means a radiation area where accessibility control is used as a safety measure for radiation protection;
- “Radioactive material” means elements or compounds which consist of unstable atom structures and which emit ionizing radiation;
- “Source material” means uranium oxide (U_3O_8), thorium oxide (ThO_2), or compounds of uranium oxide and thorium oxide, containing at least 15% in concentrated ore;
- “Supervised area” means an area not classified as a “control area”; and
- “Unsealed source” means a radiation source which is permanently unsealed and does not have a cover.

18.32 Does the radioactive material operator provide at least 6 hours of training on theory, methodology, demonstration, and practice, as well as safety training on the following topics, to all persons who conduct radiation work before they begin the work: [\[Ministerial Regulation Re: SHE for a Workplace Dealing with Ionizing Radiation, Section 5, Clause 27\]](#) and [\[Notification Re: Work Safety Training, Clause 3-5\]](#)

- Type, classification, and definition of the radiation;
- Safety and occupational health regulations for a workplace dealing with ionizing radiation;
- Safety protection plan;
- Inspection of work conditions and preparation of equipment for use to work in areas exposed to radiation at a level of more than 2.5 microSieverts per hour;
- Safety work instructions to work in areas radiating at the level of more than 2.5 microSieverts/hour but less than 25 microSieverts/hour;

- Potential emergency accident and evacuation plan;

Notes: According to verbal clarification with the Department of Labor Protection and Welfare, an “emergency accident” means an accident that causes a hazard or danger.

- Regulations and procedures for working with radiation;
- Radiation warning signs and warning labels;
- Use of personal recording radiation devices; and
- Use of PPE?

18.33 Does the facility update the training in Question [18.32](#) every year or whenever the amount of radiation or radiation level has changed? [[Ministerial Regulation Re: SHE for a Workplace Dealing with Ionizing Radiation, Section 5, Clause 27](#)] and [[Notification Re: Work Safety Training, Clause 7](#)]

18.34 Does the facility maintain records of the training described in Question [18.32](#) and Question [18.33](#) that include the training date, training location, and trainer’s signature? [[Ministerial Regulation Re: SHE for a Workplace Dealing with Ionizing Radiation, Section 5, Clause 27](#)] and [[Notification Re: Work Safety Training, Clause 6](#)] <RECORD KEEPING>

18.35 Have employees who work in supervised areas and control areas been provided with training concerning the following issues: [[Notification Re: License Pursuant to Atomic Energy B.E. 2546, Annex No.15, Clause 1](#)]

- External and internal effects of radiation on the human body;
- Methods and procedures for prevention of risks from, and safe use of, radioactive material, including the appropriate work procedures to minimize exposure to radiation, including information about the following:
 - Duration of exposure;
 - Distance from the source; and
 - Radiation protection guards;

- Facility's rules on radiation protection and safety measures for radioactive material storage;
- Record keeping and report procedures for employee radiation levels; and **<RECORD KEEPING>**
- Historical records of the origin, inventory, distribution and usage amount of source material? **<RECORD KEEPING>**

18.36 Have employees who work in control areas been provided with training that addresses the following issues: [Notification Re: License Pursuant to Atomic Energy B.E. 2546, Annex No.15, Clause 2]

- The safe use of unsealed source material;
- Radioactive waste management from unsealed source material; and
- Transportation of radioactive material?

18.37 If the facility has a radiation protection and radiation safety plan for normal work conditions and radiation emergency or accident plan, does it conduct drills in accordance with these plans at least one a year? [Ministerial Regulation Re: SHE for a Workplace Dealing with Ionizing Radiation, Section 2, Clause 13]

18.38 Does the facility prohibit persons between 16 and 18 years old from accessing a control area, except for the purpose of training under the close supervision of a radiation safety officer? [Ministerial Regulation Re: License Pursuant to Atomic Energy B.E. 2546, Clause 16]

18.39 If the facility holds a permit for radiation by-products or energy from radiation generators, does it provide training for operators who work in radiation areas, as specified by the Atomic Energy Commission? [Ministerial Regulation Re: Licenses and Operations B.E. 2550, Clauses 27-29]

Notes: The Regulation does not provide specific details on the training.

18.40 If the facility holds a nuclear materials permit, does it provide training to qualified operators who conduct work related to nuclear material? [Ministerial Regulation Re: Licenses and Operations B.E. 2550, Clauses 40-42, 44]

Notes: The Regulation does not provide specific details on this training.

VIII. Chemical Management

- 18.41** Does the facility have workers with specific knowledge of the use, storage, transport and loading of gas who have earned a certification by passing the training course prescribed by the Department of Industrial Works (DIW)? [*Notification of MOI Re: Registration to be Gas Controller, Gas Transporter, and Gas Filler in the Factory, Clauses 2, 3 and 4*]

Notes: The training curriculum is prescribed by the Department of Industrial Works, and is composed of both theoretical and practical instruction on topics such as industrial laws, properties of gas, gas tank requirements, tasks of gas controllers, transporters, loaders, etc. More details on the training course, the required qualifications for attendees, and the qualifications of trainers are available at the following web link: <http://www.ratchakitcha.soc.go.th/DATA/PDF/2549/E/125/16.PDF> (last accessed in August 2010).

Workers with specific knowledge of the use, storage, transport and loading of gas must attend a training session covering not less than 80 percent of the entire training curriculum, and must pass a certification exam with a score of at least 60 percent. [*Notification of MOI Re: Registration to be Gas Controller, Gas Transporter, and Gas Filler in the Factory, Clauses 2, 3 and 4*]

Workers who complete the training course and pass the exam will receive a certified approval letter from the training provider. The certified approval letter from the training provider may then be submitted with personnel documentation for the worker to register as a gas controller, gas transporter or gas loader. Each registration is valid for five years. [*Notification of MOI Re: Registration to be Gas Controller, Gas Transporter, and Gas Filler in the Factory, Clauses 2, 3 and 4*]

- 18.42** If the facility provides the training course described in Question [18.41](#) for gas workers (rather than contracting with a third-party training provider), does it meet the following requirements: [*Notification of MOI Re: Registration to be Gas Controller, Gas Transporter, and Gas Filler in the Factory, Clause 5*]

- Registers with the Department of Industrial Works as a training provider;
- Employs a trainer who holds the following qualifications:
 - A degree in engineering or the sciences and at least three years of working experience in the field related to gas control, gas use, gas loading or gas transport; or

- An associate's degree in mechanical engineering, industrial engineering, technical industrial engineering, electrical engineering, and at least five years of experience working in a field related to gas control, gas use, gas loading or gas transport;
- Presents the training curriculum as prescribed by the Department of Industrial Works;
- Notifies the Department of Industrial Works at least seven days prior to each training course; and
- Reports the results of each training course to the Department of Industrial Works?

18.43 If the facility conducts activities with gas or related to a gas service station, storage facility, or liquefied petroleum gas (LPG) transport facility, does it ensure that the gas workers attend the training course for distributing operators, provided by the Department of Energy Business? [*Notification of DEB Re: Gas Packages, Gas Pumping Machines, Gas Pipeline Systems, and Controlling Stations, Clause 2, 3 and 4*]

Notes: Persons who attend the training course for gas distribution must be at least 20 years old and must have at least three years of experience working at gas service stations or gas storage facilities, or must have completed education through at least the undergraduate level or equivalent. LPG transporters must be at least 20 years old and must have held a drivers license for at least 2 years. Gas distribution workers must be at least 20 years old and must be able to speak the Thai language. The training course contains instruction on gas laws, properties of LPG, responsibilities of workers, fire extinguishing procedures, and practical training. More information can be obtained at the following web link: <http://www.ratchakitcha.soc.go.th/DATA/PDF/2550/E/198/1.PDF> (last accessed in August 2010). Information about trainer responsibilities and content of the training courses may also be accessed at this web link.

All workers who attend the training, regardless of their position, must attend both the theoretical and practical parts of the curriculum, and must pass an evaluation given by the Department of Energy Business. [*Notification of DEB Re: Gas Packages, Gas Pumping Machines, Gas Pipeline Systems, and Controlling Stations, Clause 2, 3 and 4*]

A person who passes the evaluation for the position of gas distribution operator is considered to have also passed the evaluation for the position of LPG transporter and for gas delivery operations. [*Notification of DEB Re: Gas Packages, Gas Pumping Machines, Gas Pipeline Systems, and Controlling Stations, Clauses 2, 3 and 4*]

A person who passes the evaluation for the position of LPG transporter is considered to have also passed the evaluation for the position of gas delivery worker. [*Notification of DEB Re: Gas Packages, Gas Pumping Machines, Gas Pipeline Systems, and Controlling Stations, Clauses 2, 3 and 4*]

18.44 If the facility provides the training course for employees who work in a gas service station, gas storage facility, or LPG transport facility (i.e., does not contract with a third-party training provider), does it conduct the following procedures: [*Notification of DEB Re: Gas Packages, Gas Pumping Machines, Gas Pipeline Systems, and Controlling Stations, Clauses 5, 6, 7, 15 and 17*]

- Maintains documentation, particularly, the personnel data of each attendee and ensures that it can provide ready and easy access to this information in the event of an inspection; and **<RECORD KEEPING>**
- Ensures that the training course provides, at a minimum, information about gas laws, properties of LPG, responsibilities of workers, fire extinguishing procedures, and practical training?

Notes: More details on the training requirements and training curriculum are available at the following web link: <http://www.ratchakitcha.soc.go.th/DATA/PDF/2550/E/198/1.PDF> (last accessed in August 2010).

18.45 If the facility appoints a person to the position of gas worker, does it notify the Department of Energy Business not less than 15 days in advance of the appointment, and does it provide the following information about the appointee's training: [*Notification of DEB Re: Gas Packages, Gas Pumping Machines, Gas Pipeline Systems, and Controlling Stations, Clauses 5, 6, 7, 15 and 17*]

- Date, time and place of the training attended by the appointee;
- Details of the curriculum of the training, including the objectives and the training methods;
- Name of the trainer; and
- Seal or symbol of the trainer on the attendee's cards?

Notes: The registration number of the certificate of approval must match the number of the identification card of a gas distribution operator. The identification card is valid for 5 years from the date of issuance, and may be renewed within 30 days before the expiration date. [\[Notification of DEB Re: Gas Packages, Gas Pumping Machines, Gas Pipeline Systems, and Controlling Stations, Clauses 5, 6, 7, 15 and 17\]](#)

If a worker has attended the training course for gas distribution operators and has not yet passed the curriculum, he or she must attend the training course within 60 days from the day the facility informs the Department of Energy of its intent to appoint this person. [\[Notification of DEB Re: Gas Packages, Gas Pumping Machines, Gas Pipeline Systems, and Controlling Stations, Clauses 5, 6, 7, 15 and 17\]](#)

IX. Construction Work Site Safety

- 18.46** Does the facility provide periodic training for employees, such as on machine operations and signal codes? [\[Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 14\]](#)

Notes: The Regulation does not provide additional details on the content of the required training.

- 18.47** Is PPE training provided prior to its use? [\[Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 112\]](#)

Notes: The Regulation does not indicate who is responsible for the provision of this training.

- 18.48** Does the facility ensure that, when conducting drilling or excavation work with a depth of 2 m or more, it provides a work controller who has experience in soil work and has passed a training course to render assistance and first aid at the mouth of a drilled hole or other excavation? [\[Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 34\]](#)

Notes: The Regulation does not indicate who is responsible for the provision of this training.

- 18.49** Does the facility ensure that employees who use dangerous machines are skilled in using that machine and have passed an appropriate training course? [\[Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 70\]](#)

Notes: Training must be according to the criteria, method and conditions prescribed by the Director-General. [\[Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 70\]](#)

The Regulation does not indicate who is responsible for the provision of this training.

- 18.50** Does the facility arrange for employees who control cranes, give signals to crane controllers, connect materials to cranes, or who supervise the use of cranes, to pass a training course on the performance of these duties, as well as a training or review on working with cranes? [[Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 75](#)]

Notes: The Regulation does not indicate who is responsible for the provision of this training.

- 18.51** Does the facility assign an employee who is at least 18 years of age and has received training on the use of lifts, to control temporary lifts whenever in use? [[Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 83](#)]

Notes: The Regulation does not indicate who is responsible for the provision of this training.

- 18.52** If the facility conducts permitted demolition under the *Building Control Act*, does it engage an engineer to arrange for employee training or instruction concerning demolition procedures and methods prior to beginning work? [[Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 107](#)]

Table 18-1**Training Courses Required for Employees Whose Work is Related to Confined Space**

Course Outline (Hours)	1	2	3	4	5
Thailand Legislation related to confined space (1)	X	X	X	X	X
Definition and type of confined space (1)	X	X	X	X	X
Hazard identification, assessment and control (1)	X	X	X	X	X
Confined space safe work procedures (1)	X	X	X	X	X
Personal protective equipment (1)	X	X	X	X	X
Confined space entry permits and permit termination (0.5)	X	X	X	X	X
Responsibilities of all party (0.5)	X	X	X	X	X
Techniques of inspecting confined space (1)		X	X	X	X
Ventilation procedures (1)		X	X	X	X
Order for temporary stop of working (0.5)		X			X
Planning for executing and for safety protection from hazards (0.5)		X			X
Assessing emergency/hazard procedures and evacuation (0.5)			X	X	X
Preliminary firefighting (0.5)			X	X	X
Cardio-pulmonary resuscitation (0.5)			X		X
First aid (0.5)			X		X
Course Duration (Hours)	1	2	3	4	5
Theory (minimum)	6	9	10	9	11
Practical (minimum)	-	3	5	3	5

Notes: 1. Employees responsible for issuing confined space work permits

2. Supervisors of confined space work

3. Life supporters of workers who work in confined spaces

4. Employees who work in confined spaces

5. Employees who are able to respond for all 4 tasks as described above (substituting for an Approver, supervisor, lift supporter, and confined space worker)

Source: Notification Re: Confined Space Training Course B.E. 2549, Clauses 10-14.

User Instructions for Audit Quick Check

The Audit Quick Check (AQC) is provided for use in recording your audit results. The AQC document is in MS Word; there is also a PDF version. However, the latter format does not contain the electronic links and other functionality contained in the MS Word version. The following instructions pertain to the fully linked Word version of the AQC.

Each question from the formal protocol is re-created in full in the AQC, but without the provision of any associated Notes or other guidance. However, electronic links back to the original protocol document are provided for quick access to this information when needed. To return to where you were in the AQC after following a link, use the back arrow located on the Audit Quick Check Toolbar.

Categories of Responses

On the far right hand side of the AQC, there are three boxes for the auditor to complete, depending upon the observation made. The default settings are: Not Applicable (Column 1), Complies (Column 2), and Does Not Comply (Column 3). The user may change the nomenclature, if desired. Simply click on the column heading and make the desired change or changes. There is a sort feature that can be used following completion of your audit; this is discussed later in the instructions below.

Marking Your Response

Using your cursor, move to the appropriate response category and type an “X” into the box to indicate a selection. There is sufficient room in each box to allow you to add a double XX, or even a triple XXX. Users may want to use these additional X’s to further explain a point (e.g., X=marginally out of compliance; XX=substantially out of compliance; XXX=serious compliance problem). Alternatively, different symbols could be used (e.g., +, ▲)

Comment Box

Beneath each question, there is a place for a comment. You may expand the available space for your comment by continuing to type.

Additional Audit Questions

Additional audit questions can be added to the end of the AQC. Examples might include corporate requirements or best management practices. To add more questions, position the cursor outside of the right hand margin of the table, and hit “Enter.” This will create a new row below. Continue to sequentially number the questions by putting your cursor in the first column and typing the desired number.

Please Note: Additional rows will be included in the sort function. It is important that you number the questions for the sort functions to work. Please consider the following sort rules when entering custom text.

Sorting Responses

The AQC sort feature is accessed from the IAPC menu item located on the far right on the Main MS Toolbar. Please note the following criteria to take full advantage of this feature.

You can change the column titles as you see fit, but the menus assume that:

- the first column contains the question number and question text;
- the second column is "Not Applicable" (N/A) entries;
- the third column is "Complies" entries; and
- the fourth column is "Does Not Comply" entries.

A question is considered "Complies" if there is any text ("X" or "YES", for instance) in the "Complies" column.

A question is considered "Incomplete" if columns 2 to 4 are all empty.

Only one column should contain a value for any given question.

Click the IAPC menu item and then select one of the following menu choices:

Sort by Question Number

- Sorts the section by question number

Sort with Incomplete first

- Sorts the section with Incomplete first, Does Not Comply next, Complies next, then N/A

Sort with Non-compliant first

- Sorts the section with Does Not Comply first, Complies next, N/A next, then Incomplete

Sort with Compliant first

- Sort the section with Complies items first, Does Not Comply next, N/A next, then Incomplete

Sort with Not Applicable last

- Sort the section with not-applicable items last (Complies first, Does Not Comply next, Incomplete next, then N/A)

For example, you might want to identify all questions that have been marked, Does Not Comply. In this case, you click the IAPC menu item and choose "Sort with Non-compliant first". Audit Quick Check will then automatically re-sort the questions so that those where you have checked Does Not Comply are identified first, followed by the remaining questions.

Once the completed AQC is sorted, save or print a copy of the results. The AQC can then be re-sorted using a different option.

Section 18 Audit Quick Check

SECTION 18.0 EH&S TRAINING

AUDIT QUICK CHECK

SITE: _____ DATE: _____

ASSESSOR: _____

	Not Applicable	Complies	Does Not Comply
Q18.1 If the facility generates waste and unusable materials, does it provide waste supervisor training to environmental personnel involved in these activities to ensure that the work is performed correctly? <i>[Notification Re: Disposal of Wastes or Unusable Materials B.E. 2548, Section 2, Clause 7]</i> See protocol for notes. I. Solid and Hazardous Waste Comments:			
Q18.2 Does the facility provide training and information to employees regarding the dangers of the hazardous substances (including wastes) in the workplace? <i>[Ministerial Regulation B.E. 2537, Clause 21]</i> I. Solid and Hazardous Waste Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.3 If the facility has 50 or more employees and it has established a Safety, Health and Environment Work Committee (as specified in Section 10.0 of this protocol), does it ensure that its safety officers are trained on safety in the working environment according to the criteria defined by Director-General of Welfare and Labor Protection Department (hereafter the "Director-General") as follows: <i>[Regulation Re: Training Standards of Safety Officers, Section 1, Clause 6; Section 2, Clause 7; Section 3, Clause 8 and Section 4, Clause 9]; [By-Law Re: Training Course for Safety Officers, Section 1, Clause 4; Section 2, Clause 5; Section 3, Clause 6; Section 4, Clauses 4 and 7 and Section 5, Clause 8] and [Notification Re: Criteria and Procedures for Training Safety Officers, Section 2, Clauses 9-10]</i> – 30 hours for safety officers at a fundamental level; – 12 hours for safety officers at a supervisor level; – 18 hours for safety officers at technical level; – 18 hours for safety officers at higher technical level; – 12 hours for safety officers at a managerial level; and – 192 hours and 30 days of practical experience in the facility for safety officers at a professional level? See protocol for notes. II. General Health and Safety Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.4 Does the facility ensure that the responsibilities of safety officers at the supervisor level, higher technical level and professional level include training employees on the procedures or instructions for work safety, to ensure that each employee can perform work correctly and according to the established procedures? [<i>Ministerial Regulation Re: Safety Health and Environment Management Standards, Clauses 9, 15 and 18</i>] See protocol for notes. II. General Health and Safety Comments:			
Q18.5 Does the facility ensure that its safety department provides training on work safety instructions to the following employees: [<i>Ministerial Regulation Re: Safety Health and Environment Management Standards, Clauses 3, 5 and 34</i>] – New employees; or – Existing employees who are re-assigned to perform work which may cause new adverse effects to the employees' health? II. General Health and Safety Comments:			
Q18.6 Does the facility provide classroom training and on-the-job training to ensure that employees can perform work safely? [<i>Ministerial Regulation Re: Safety Health and Environment Management Standards, Clause 3</i>] II. General Health and Safety Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.7 If the facility has a Safety, Health and Environment Work Committee, does it provide a training program covering the roles and responsibilities of this committee, as prescribed in Table 10-4 in Section 10.0 of this protocol? <i>[Notification Re: SHE Training for SHE Committee, Clauses 3 and 4]</i> II. General Health and Safety Comments:			
Q18.8 Does the facility provide the “Chief Safety Training Program” to its safety officers at the supervisor level, technical level, higher technical level and professional level, as prescribed in Table 10-5 in Section 10.0 of this protocol? <i>[Notification Re: Safety Training Course for Manager of Safety Department, Clauses 3 and 4]</i> II. General Health and Safety Comments:			
Q18.9 Are the members of the Safety, Health and Environment Work Committee trained for the roles and responsibilities defined by Labor Department (and described in Section 10.0 of this protocol) within 60 days of the establishment of the committee? <i>[Ministerial Regulation Re: Safety Health and Environment Management Standards, Clause 28]</i> and <i>[Notification Re: SHE Training for SHE Committee, Clause 3]</i> See protocol for notes. II. General Health and Safety Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.10 Does the facility submit the Safety, Health and Environment Work Committee training results to the Director-General of the Department of Labor Protection and Welfare or another authorized person (identified by the Department) within 30 days of the training? [<i>Notification Re: SHE Training for SHE Committee, Clause 7</i>] See protocol for notes. II. General Health and Safety Comments:			
Q18.11 Does the facility ensure that workers who are assigned work in connection with a pressing machine, arc welder, gas welder, forklift, or any other machine which is of a hazardous nature, passes a training course to demonstrate their knowledge in the operation of the machine? [<i>Ministerial Regulation Re: Standards for Machines, Cranes and Boilers, Clause 9</i>] See protocol for notes. III. Equipment, Machine and Electrical Safety Comments:			
Q18.12 Have all employees who work with electricity been given training related to the following: [<i>Notification Re: Electrical Safety, Clause 83</i>] – Procedures to follow if an employee is exposed to electricity; and – First aid, mouth-to-mouth resuscitation and CPR? III. Equipment, Machine and Electrical Safety Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.13 Does the facility ensure that only persons who are trained on the requirements in the <i>Notification of Labor Protection and Welfare Department Re: Prescribing Procedure and Safety Training Course Related to Confined Space Work, 2006</i> are allowed to work in or enter into a confined space? [Ministerial Regulation Re: Confined Space B.E. 2547, Clauses 4-5] See protocol for notes. IV. Material Handling and In-Plant Safety Comments:			
Q18.14 Does the facility provide the training prescribed in Table 18-1 to the following employees: [Ministerial Regulation Re: Confined Space B.E. 2547, Clause 21] and [Notification Re: Confined Space Training Course B.E. 2549, Clauses 4-15] – Employees who are responsible for approving confined space work permits; – Supervisors of confined space work; – Life supporters of employees who work in confined spaces; – Employees who work in confined spaces; and – Any employees who are able to respond for all four tasks described above (substituting for an approver, supervisor, life supporter, or confined space worker)? IV. Material Handling and In-Plant Safety Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.15 Does the facility retain confined space training records at the facility, including the attendee training list, the date and time of the training, and the name of trainer? <i>[Notification Re: Confined Space Training Course B.E. 2549, Clause 25]</i> and <i>[Ministerial Regulation Re: Confined Space B.E. 2547, Clauses 6 and 20]</i> <RECORD KEEPING> IV. Material Handling and In-Plant Safety Comments:			
Q18.16 Does the facility submit confined space training results to the Director-General of the Department of Labor Protection and Welfare at least once a year with the following details: <i>[Notification Re: Confined Space Training Course B.E. 2549, Clause 26]</i> and <i>[Notification of Labor Protection and Welfare Re: Electronic Report Submission B.E. 2553, Clauses 3(5), 4 and 5]</i> – Training course title; – Number of training attendees; – Name of the trainer; and – Date and time of the training? See protocol for notes. IV. Material Handling and In-Plant Safety Comments:			

		Not Applicable	Complies	Does Not Comply
Q18.17 Does the facility ensure that employees who operate a forklift pass a training course? [<i>Ministerial Regulation Re: Standards for Machines, Cranes and Boilers, Clause 36</i>] See protocol for notes. IV. Material Handling and In-Plant Safety Comments:				
Q18.18 Does the facility provide crane operators, crane signaling personnel, crane loading and unloading personnel and other persons who control the use of cranes, with an initial and periodic refresher training courses in relation to their duties, including the use, cleaning and maintenance of safety equipment related to operating cranes? [<i>Ministerial Regulation Re: Standards for Machines, Cranes and Boilers, Clause 65</i>] See protocol for notes. IV. Material Handling and In-Plant Safety Comments:				
Q18.19 Has the facility developed a written fire protection and prevention plan that includes information about employee training? [<i>Notification Re: Fire Safety, Clauses 3 and 4</i>]; [<i>Ministerial Regulation No. 2 B.E. 2535, Clause 5</i>] and [<i>Notification Re: Fire Prevention and Suppression in Factories B.E. 2552, Clause 27</i>] V. Fire Safety Comments:				

	Not Applicable	Complies	Does Not Comply
Q18.20 Have at least 40% of employees at the facility received annual fire fighting training from a local fire fighting authority or other competent training organization? <i>[Notification Re: Fire Safety, Clauses 19(3) and 36]</i> See protocol for notes. V. Fire Safety Comments:			
Q18.21 Does the facility provide evacuation training to employees at least once each year? <i>[Notification Re: Fire Safety, Clauses 35 and 36]</i> See protocol for notes. V. Fire Safety Comments:			
Q18.22 If the facility is a factory with a high or moderate risk of fire (as indicated in the Subsection entitled, "Factories with a High or Moderate Risk of Fire" in Section 13.0 of this protocol), does it maintain documents pertaining to worker fire prevention and suppression training, and are these available for review by the competent authorities? <i>[Notification Re: Fire Prevention and Suppression in Factories B.E. 2552, Clauses 16 and 17]</i> <RECORD KEEPING> V. Fire Safety Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.23 If the facility conducts fire evacuation training, is a written description of this training provided to the Director-General of the Labor Department for approval at least 30 days <u>prior</u> to conducting the training? [<i>Notification Re: Fire Safety, Clause 36</i>] and [<i>Notification of Labor Protection and Welfare Re: Electronic Report Submission B.E. 2553, Clauses 3(4), 4 and 5</i>] See protocol for notes. V. Fire Safety Comments:			
Q18.24 Are reports of all completed evacuation training (as described in Question 18.23) also provided to the Director-General within 30 days of having completed each training session? [<i>Notification Re: Fire Safety, Clause 36</i>] and [<i>Notification of Labor Protection and Welfare Re: Electronic Report Submission B.E. 2553, Clauses 3(4), 4 and 5</i>] See protocol for notes. V. Fire Safety Comments:			
Q18.25 If there is a risk of a moderate or serious fire at the facility, has the facility established a fire response team that has received training in fire prevention, use of fire equipment, first aid and emergency medical rescue? [<i>Notification Re: Fire Safety, Clause 34(2)</i>] See protocol for notes. V. Fire Safety Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.26 If the facility transports hazardous substances, are employees involved in the transport of dangerous goods, including drivers, trained in the following subjects and provided with refresher training every 3 years: [<i>Ministerial Regulation B.E. 2537, Clause 19</i>] and [<i>Notification for the Resolution of the Hazardous Substance Commission</i>] – Characteristics of hazardous substances/dangerous goods; – Classification and labeling of hazardous substances/dangerous goods; – Emergency protection and emergency response; – Procedures for self-protection and environmental pollution prevention; – Packaging, loading and transport of dangerous goods, including possible chemical reactions between different dangerous goods when packed together; – Affixing of placards or labels to tanks/containers on vehicles; – Loading and unloading procedures for tanks; – Responsibilities of various personnel with regard to the transport of dangerous goods; – Safety driving procedures, including the proper driving speed; and – Reporting procedures and information, should any accident or emergency occur? See protocol for notes. VI. Transport of Dangerous Goods Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.27 If the facility transports hazardous substances, is the head of the department of the facility trained in the following topics and provided with refresher training every 3 years: <i>[Notification for the Resolution of the Hazardous Substance Commission]</i> – Dangers and risks of dangerous goods and hazardous substances; – Regulations related to dangerous goods and hazardous substances; and – Duties and responsibilities of each department of the facility involved in the transport of dangerous goods and hazardous substances? See protocol for notes. VI. Transport of Dangerous Goods Comments:			
Q18.28 Does the facility provide training or inform employees who are responsible for moving or transporting radioactive source material of the following: <i>[Notification Re: Transport of Radioactive Material, Clause 6]</i> – Work safety procedures for moving or transporting radioactive source material; – Hazards of radioactive source material; and – Prevention of the hazards of radioactive source material? See protocol for notes. VI. Transport of Dangerous Goods Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.29 If the heat level of a work area is more than the level shown in Table 15-1 in Section 15.0 of this protocol, does the facility carry out the following: [Notification Re: Safety Protection B.E. 2546, Section 1, Clauses 3-4] and [Ministerial Regulation Re: SHE for a Workplace Dealing with Heat, Light, and Noise, Section 1, Clause 4 and Section 4, Clauses 13-14] – Provide training in the use and maintenance of personal protective equipment (PPE); and – Set up a system of methodology or procedures on how to use the PPE? VII. Industrial Hygiene Comments:			
Q18.30 Are employees who work with lethal chemicals trained or informed on the hazards of lethal chemicals? [Notification No. 24 Re: Duties of the Holder of a Factory Business Operation License B.E. 2530, Clause 64] VII. Industrial Hygiene Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.31 Does the facility provide training and information regarding the hearing conservation program to employees, and does the training include the following details and objectives: <i>[Notification Re: Criteria and Method of Hearing Conservation Program B.E. 2553, Clauses 9 and 11]</i> – Understanding of, and emphasis on, hearing conservation program; – Importance of audiometric testing; – Noise hazards and prevention; and – How to use PPE? See protocol for notes. VII. Industrial Hygiene Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.32 Does the radioactive material operator provide at least 6 hours of training on theory, methodology, demonstration, and practice, as well as safety training on the following topics, to all persons who conduct radiation work before they begin the work: [<i>Ministerial Regulation Re: SHE for a Workplace Dealing with Ionizing Radiation, Section 5, Clause 27</i>] and [<i>Notification Re: Work Safety Training, Clause 3-5</i>] – Type, classification, and definition of the radiation; – Safety and occupational health regulations for a workplace dealing with ionizing radiation; – Safety protection plan; – Inspection of work conditions and preparation of equipment for use to work in areas exposed to radiation at a level of more than 2.5 microSieverts per hour; – Safety work instructions to work in areas radiating at the level of more than 2.5 microSieverts/hour but less than 25 microSieverts/hour; – Potential emergency accident and evacuation plan; – See protocol for notes. – Regulations and procedures for working with radiation; – Radiation warning signs and warning labels; – Use of personal recording radiation devices; and – Use of PPE? VII. Industrial Hygiene Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.33 Does the facility update the training in Question 18.32 every year or whenever the amount of radiation or radiation level has changed? [Ministerial Regulation Re: SHE for a Workplace Dealing with Ionizing Radiation, Section 5, Clause 27] and [Notification Re: Work Safety Training, Clause 7] VII. Industrial Hygiene Comments:			
Q18.34 Does the facility maintain records of the training described in Question 18.32 and Question 18.33 that include the training date, training location, and trainer's signature? [Ministerial Regulation Re: SHE for a Workplace Dealing with Ionizing Radiation, Section 5, Clause 27] and [Notification Re: Work Safety Training, Clause 6] <RECORD KEEPING> VII. Industrial Hygiene Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.35 Have employees who work in supervised areas and control areas been provided with training concerning the following issues: <i>[Notification Re: License Pursuant to Atomic Energy B.E. 2546, Annex No.15, Clause 1]</i> – External and internal effects of radiation on the human body; – Methods and procedures for prevention of risks from, and safe use of, radioactive material, including the appropriate work procedures to minimize exposure to radiation, including information about the following: – Duration of exposure; – Distance from the source; and – Radiation protection guards; – Facility's rules on radiation protection and safety measures for radioactive material storage; – Record keeping and report procedures for employee radiation levels; and <RECORD KEEPING> – Historical records of the origin, inventory, distribution and usage amount of source material? <RECORD KEEPING> VII. Industrial Hygiene Comments:			

		Not Applicable	Complies	Does Not Comply
Q18.36 Have employees who work in control areas been provided with training that addresses the following issues: <i>[Notification Re: License Pursuant to Atomic Energy B.E. 2546, Annex No.15, Clause 2]</i> – The safe use of unsealed source material; – Radioactive waste management from unsealed source material; and – Transportation of radioactive material? VII. Industrial Hygiene Comments:				
Q18.37 If the facility has a radiation protection and radiation safety plan for normal work conditions and radiation emergency or accident plan, does it conduct drills in accordance with these plans at least one a year? <i>[Ministerial Regulation Re: SHE for a Workplace Dealing with Ionizing Radiation, Section 2, Clause 13]</i> VII. Industrial Hygiene Comments:				
Q18.38 Does the facility prohibit persons between 16 and 18 years old from accessing a control area, except for the purpose of training under the close supervision of a radiation safety officer? <i>[Ministerial Regulation Re: License Pursuant to Atomic Energy B.E. 2546, Clause 16]</i> VII. Industrial Hygiene Comments:				

	Not Applicable	Complies	Does Not Comply
Q18.39 If the facility holds a permit for radiation by-products or energy from radiation generators, does it provide training for operators who work in radiation areas, as specified by the Atomic Energy Commission? [<i>Ministerial Regulation Re: Licenses and Operations B.E. 2550, Clauses 27-29</i>] See protocol for notes. VII. Industrial Hygiene Comments:			
Q18.40 If the facility holds a nuclear materials permit, does it provide training to qualified operators who conduct work related to nuclear material? [<i>Ministerial Regulation Re: Licenses and Operations B.E. 2550, Clauses 40-42, 44</i>] See protocol for notes. VII. Industrial Hygiene Comments:			
Q18.41 Does the facility have workers with specific knowledge of the use, storage, transport and loading of gas who have earned a certification by passing the training course prescribed by the Department of Industrial Works (DIW)? [<i>Notification of MOI Re: Registration to be Gas Controller, Gas Transporter, and Gas Filler in the Factory, Clauses 2, 3 and 4</i>] See protocol for notes. VIII. Chemical Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.42 If the facility provides the training course described in Question 18.41 for gas workers (rather than contracting with a third-party training provider), does it meet the following requirements: [<i>Notification of MOI Re: Registration to be Gas Controller, Gas Transporter, and Gas Filler in the Factory, Clause 5</i>] – Registers with the Department of Industrial Works as a training provider; – Employs a trainer who holds the following qualifications: – A degree in engineering or the sciences and at least three years of working experience in the field related to gas control, gas use, gas loading or gas transport; or – An associate's degree in mechanical engineering, industrial engineering, technical industrial engineering, electrical engineering, and at least five years of experience working in a field related to gas control, gas use, gas loading or gas transport; – Presents the training curriculum as prescribed by the Department of Industrial Works; – Notifies the Department of Industrial Works at least seven days prior to each training course; and – Reports the results of each training course to the Department of Industrial Works? VIII. Chemical Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.43 If the facility conducts activities with gas or related to a gas service station, storage facility, or liquefied petroleum gas (LPG) transport facility, does it ensure that the gas workers attend the training course for distributing operators, provided by the Department of Energy Business? <i>[Notification of DEB Re: Gas Packages, Gas Pumping Machines, Gas Pipeline Systems, and Controlling Stations, Clause 2, 3 and 4]</i> See protocol for notes. VIII. Chemical Management Comments:			
Q18.44 If the facility provides the training course for employees who work in a gas service station, gas storage facility, or LPG transport facility (i.e., does not contract with a third-party training provider), does it conduct the following procedures: <i>[Notification of DEB Re: Gas Packages, Gas Pumping Machines, Gas Pipeline Systems, and Controlling Stations, Clauses 5, 6, 7, 15 and 17]</i> – Maintains documentation, particularly, the personnel data of each attendee and ensures that it can provide ready and easy access to this information in the event of an inspection; and <RECORD KEEPING> – Ensures that the training course provides, at a minimum, information about gas laws, properties of LPG, responsibilities of workers, fire extinguishing procedures, and practical training? See protocol for notes. VIII. Chemical Management Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.45 If the facility appoints a person to the position of gas worker, does it notify the Department of Energy Business not less than 15 days in advance of the appointment, and does it provide the following information about the appointee's training: <i>[Notification of DEB Re: Gas Packages, Gas Pumping Machines, Gas Pipeline Systems, and Controlling Stations, Clauses 5, 6, 7, 15 and 17]</i> – Date, time and place of the training attended by the appointee; – Details of the curriculum of the training, including the objectives and the training methods; – Name of the trainer; and – Seal or symbol of the trainer on the attendee's cards? See protocol for notes. VIII. Chemical Management Comments:			
Q18.46 Does the facility provide periodic training for employees, such as on machine operations and signal codes? <i>[Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 14]</i> See protocol for notes. IX. Construction Work Site Safety Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.47 Is PPE training provided prior to its use? [<i>Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 112</i>] See protocol for notes. IX. Construction Work Site Safety Comments:			
Q18.48 Does the facility ensure that, when conducting drilling or excavation work with a depth of 2 m or more, it provides a work controller who has experience in soil work and has passed a training course to render assistance and first aid at the mouth of a drilled hole or other excavation? [<i>Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 34</i>] See protocol for notes. IX. Construction Work Site Safety Comments:			
Q18.49 Does the facility ensure that employees who use dangerous machines are skilled in using that machine and have passed an appropriate training course? [<i>Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 70</i>] See protocol for notes. IX. Construction Work Site Safety Comments:			

	Not Applicable	Complies	Does Not Comply
Q18.50 Does the facility arrange for employees who control cranes, give signals to crane controllers, connect materials to cranes, or who supervise the use of cranes, to pass a training course on the performance of these duties, as well as a training or review on working with cranes? [<i>Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 75</i>] See protocol for notes. IX. Construction Work Site Safety Comments:			
Q18.51 Does the facility assign an employee who is at least 18 years of age and has received training on the use of lifts, to control temporary lifts whenever in use? [<i>Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 83</i>] See protocol for notes. IX. Construction Work Site Safety Comments:			
Q18.52 If the facility conducts permitted demolition under the <i>Building Control Act</i>, does it engage an engineer to arrange for employee training or instruction concerning demolition procedures and methods prior to beginning work? [<i>Ministerial Regulation Re: Construction Work Safety B.E. 2551, Clause 107</i>] IX. Construction Work Site Safety Comments:			