

HAZARDOUS CHEMICALS

LEARNING OUTCOME

Describe the requirements of the current WHS legislation and standards relating to Hazardous Chemicals.

ASSESSMENT CRITERIA

- Identify what is a hazardous chemical under the Regulation.
- Identify the physical and health hazard/s that may be presented by a hazardous chemical
- Identify how a manufacturer/importer can communicate hazards to workers.
- Describe the requirements for a compliant safety data sheet.
- Describe the requirements for a container label for hazardous chemicals.
- Describe the process for identifying appropriate risk control measures for hazardous chemicals
- Identify relevant guidance material on risk control measures for hazardous chemicals
- Describe specific notification requirements for hazardous chemicals.

REFERENCES

Work Health and Safety Act 2011

- Duties s19(3), s42, s22, s23, s24, s25

Work Health and Safety Regulations

- Part 7.1
- s328
- Schedules 6 – 18.

Codes of Practice

- [Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice](#)
- [Labelling of Workplace Hazardous Chemicals Code of Practice](#)
- [Managing Risks of Hazardous Chemicals in the Workplace Code of Practice](#)
- WHSQ hazardous chemical web page information

SafeWork Australia

Hazardous Chemicals information including various fact sheets, information sheets, and guides. SWA also maintain a hazardous chemicals information system to assist with classification of hazardous chemicals at <http://hcis.safeworkaustralia.gov.au>

ATTACHMENT

- [Managing risks of hazardous chemicals in the workplace Code of Practice 2013](#)
- Example Safety Data Sheet – *Assessment Activity 4*

HAZARDOUS CHEMICALS

The Work Health and Safety Act 2011 (the 'Act') places a legal obligation on Persons Conducting Businesses or Undertakings (PCBU's) to ensure the health and safety of their workers at work. More specifically, Part 7.1 of the Work Health and Safety Regulation 2011 (the 'Regulation') regulates the storage, handling, use and generation of hazardous chemicals. It also prohibits the supply of certain carcinogenic substances. Additionally, the Regulation imposes duties on manufacturers, importers and suppliers of hazardous chemicals in relation to classification, packing and labelling, safety data sheets, and disclosure of chemical identities.

A number of approved codes of practice on how to manage the risks associated with hazardous chemicals are available. A PCBU must comply with an approved code of practice, or manage hazards and risks arising from the conduct of the business in a way that is different to the code but provides a standard of health and safety that is equivalent to or higher than the standard required under the code. These include:

- Managing Risks of Hazardous Chemicals in the Workplace Code of Practice 2013
- Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice 2011
- Labelling of Workplace Hazardous Chemicals Code of Practice 2011

Exposure to hazardous chemicals is addressed in the module *Health and Hygiene* and addresses risks of exposure, health effects and associated regulatory requirements which include sections from the Act, Chapter 3-General risk and workplace management.

WHAT IS A HAZARDOUS CHEMICAL UNDER THE REGULATION?

Under the Regulation, a hazardous chemical is any substance, mixture or article that satisfies the criteria of one or more of the Globally Harmonised System of classification and labelling of chemicals (GHS) hazard classes, including a classification in Schedule 6 of the Regulation. However, some hazard classes and categories of the GHS are excluded by the definition of 'hazardous chemical' in Schedule 15. Additionally, other circumstances described in section 328 are excluded from Part 7.1 and thus are not subject to the hazardous chemical regulatory requirements. For example, the following situations are excluded from Part 7.1 requirements:

- a) hazardous chemicals in batteries when incorporated in plant
- b) fuel, oils or coolants in a container fitted to a vehicle, vessel, aircraft, mobile plant, appliance or other device, if the fuel, oil or coolant is intended for use in the operation of the device
- c) fuel in the fuel container of a domestic or portable fuel burning appliance, if the quantity of fuel does not exceed 25kg or 25L
- d) hazardous chemicals in portable firefighting or medical equipment for use in a workplace
- e) hazardous chemicals that form part of the integrated refrigeration system of refrigerated freight containers, and
- f) potable liquids that are consumer products at retail premises.

Many substances and mixtures that are dangerous goods under the ADG code for the purposes of transport are hazardous chemicals. Notable exceptions include those that have only radioactive hazards (class 7 dangerous goods), infectious substances (division 6.2) and most class 9 (miscellaneous) dangerous goods.

A chemical generated in a workplace, such as respirable crystalline silica from cutting concrete, is considered a hazardous chemical if it meets the GHS classification criteria.

Introduction to the GHS classification system

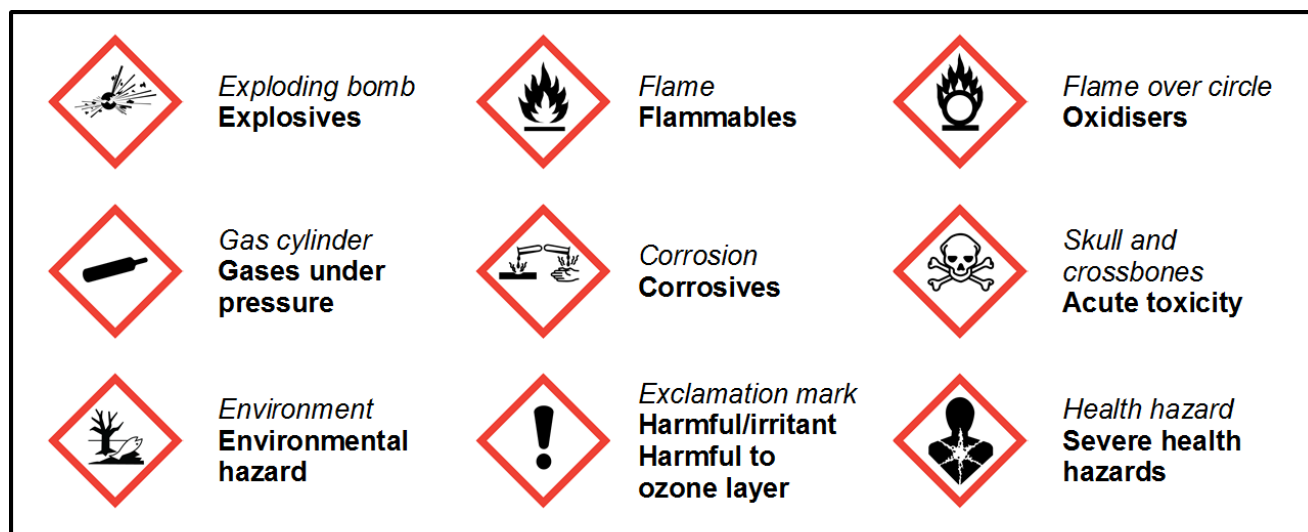
In relation to chemicals, a hazard is a set of inherent properties of the substance, mixture, article or process that may cause adverse effects to organisms or the environment. There are two broad types of hazards associated with hazardous chemicals which may present an immediate or long term injury or illness to people. These are:

- **Health hazards** – These are properties of a chemical that have the potential to cause adverse health effects. Exposure usually occurs through inhalation, skin contact or ingestion. Adverse health effects can be acute (short term) or chronic (long term). Typical acute health effects include headaches, nausea or vomiting and skin corrosion, while chronic health effects include asthma, dermatitis, nerve damage or cancer.
- **Physicochemical hazards** – These are physical or chemical properties of the substance, mixture or article that pose risks to workers other than health risks, as they do not occur as a consequence of the biological interaction of the chemical with people. They arise through inappropriate handling or use and can often result in injury to people and/or damage to property as a result of the intrinsic physical hazard. Examples of physicochemical hazards include flammable, corrosive, explosive, chemically reactive and oxidising chemicals.

Many chemicals have both health and physicochemical hazards according to the criteria of the GHS.

GHS hazard classes

There are nine hazard pictograms in the GHS which represent the physical, health and environmental hazards. As discussed above, the Regulation focusses on the physical and health hazards.



For a full list of the GHS hazard classes and categories with the associated pictograms, signal words and hazard statements, refer to the SWA poster shown below available at https://www.safeworkaustralia.gov.au/system/files/documents/1702/classification_and_labelling_workplace_hazardous_chemicals_poster.pdf

² The table in the Program and Financial Statement should be included in the bid.

It is the responsibility of the manufacturer, or the Australian importer if manufactured overseas, to correctly classify their product (substance, mixture or article) and determine if it is a hazardous chemical under the Regulation (section 329).

In summary, Part 7.1 requirements for hazardous chemicals apply to substances, mixtures, or articles that:

- meet the criteria of the GHS, and
- are not excluded by the definition of a hazardous chemical in Schedule 19, and
- are not excluded by section 328 regarding the application of part 7.1.

HAZARD COMMUNICATION

Once a product has been correctly classified under the GHS by the manufacturer or importer and determined to be a hazardous chemical under the Regulation, then the inherent hazards of the hazardous chemical can be communicated. This is primarily achieved by a safety data sheet and container labelling. The Regulation requires the manufacturer or importer to generate these so that the hazards can be communicated down the supply chain to the end-user. The Regulation requires other duty holders such as suppliers and PCBUs to do certain things to ensure this occurs.

Safety Data Sheets (SDS)

The SDS is an important tool for communicating the inherent physical hazards and health hazards to workers and other persons that may be affected by its storage, handling or use. It also serves to inform the hazardous chemical risk management processes at a workplace. Effective control of the hazards relies on an efficient flow of information from the manufacturer/importer to the end-user.

The person writing the SDS should have appropriate expertise and have access to the product formulation and information on its correct hazard classification.

Note that the Regulation does not require a SDS for products that are not classified as a hazardous chemical.

Specific duties in relation to the preparation of safety data sheets are summarised below.

Duty holder	Responsibilities
Manufacturer and importer of a hazardous chemical Refer to section 330	• Must prepare an SDS for the hazardous chemical before first manufacturing or importing the hazardous chemical or if that is not practicable, as soon as practicable after first manufacturing or importing the hazardous chemical. • Must review the SDS at least once every 5 years and amend whenever necessary to ensure it contains correct current information.
Person conducting a business or undertaking Refer to section 345	• May change an SDS for a hazardous chemical only if: ○ the person is an importer or manufacturer; and changes the safety data sheet in a way that is consistent with the duties of the importer or manufacturer; or ○ the change is to attach a translation of the SDS, and clearly states that the translation is not part of the original SDS.

Specific duties in relation to the providing access to safety data sheets are summarised below.

Duty holder	Responsibilities
Manufacturer and importer of a hazardous chemical Refer to section 330	• Must provide the current SDS to any person, if the person is likely to be affected by the chemical or asks for the SDS.
Supplier Refer to section 339	• Must provide the current safety data sheet when the hazardous chemical is first supplied to the workplace and if the SDS is amended, when the hazardous chemical is first supplied to the workplace after the SDS is amended. • Must ensure that the current safety data sheet for the hazardous chemical is provided to a person at the workplace if the person asks for the safety data sheet (does not apply to consumer products or retailers)

Person conducting a business or undertaking Refer to section 344	• Must obtain the SDS (and any amended version) for a hazardous chemical from the manufacturer, importer or supplier no later than when the chemical is first supplied at the workplace or as soon as practicable after it is first supplied but before it is used at the workplace. • Must ensure the current SDS is readily accessible to workers who use the hazardous chemical at the workplace and an emergency service worker, or anyone else, who is likely to be exposed to the hazardous chemical • Section 344 (4) provide specific circumstances where this does not apply such as: in transit; is a consumer product at a retailer intended for supply and not intended to be opened; is a consumer product to be used in quantities and in a way consistent with household use and is incidental to the nature of the work. Note: In such circumstances, sufficient safety information is readily accessible to worker/emergency service/others who is likely to be exposed to the hazardous chemical at the workplace. • Must ensure that the current safety data sheet for the hazardous chemical is readily accessible to a person at the workplace if the person likely to be affected by the hazardous chemical and asks for the safety data sheet
---	---

If the SDS for a hazardous chemical is not supplied, you must contact either the manufacturer, importer or supplier to obtain one before the chemical is used at the workplace.

Note: A supplier of hazardous chemicals may also be a PCBU at a workplace

The SDS should be kept in a location near the work area where the substance is used. All workers likely to be exposed to the hazardous chemical must know how to find the SDS. In some cases it may be practicable to provide workers with access to SDS via an electronic database for example, in universities where potentially thousands of chemicals may be used, stored or handled at the site. However, the electronic database should be readily available to workers, workers should know how to use it, and a backup means of providing the SDS should also be provided, for example as hard copies in a filing system. Web based applications that can be accessed by multiple mobile devices may be suitable for access at multiple locations, providing access to document libraries, and provides resilience if a site is shut down or becomes inaccessible in an emergency (e.g. fire).

Content of the safety data sheet- Regulation 330, Schedule 7

A safety data sheet for a hazardous chemical must state the following information about the chemical:

- Section 1 – Identification: Product identifier and chemical identity
- Section 2 – Hazard(s) Identification: *GHS Classification of the hazardous chemical*
- Section 3 – Composition and Information on Ingredients
- Section 4 – First Aid Measures
- Section 5 – Fire Fighting Measures
- Section 6 – Accidental Release Measures
- Section 7 – Handling and Storage: *Precautions for safe handling; any incompatibilities*
- Section 8 – Exposure controls and personal protection
- Section 9 – Physical and Chemical Properties
- Section 10 – Stability and Reactivity: *Possibility of hazardous reactions, Conditions to avoid incompatible materials, Hazardous decomposition products*
- Section 11 – Toxicological Information: *Information on possible routes of exposure; Exposure*

levels and health effects;

Section 12 – Ecological Information

Section 13 – Disposal considerations

Section 14 – Transport Information

(Note: contains dangerous goods classification information which is relevant to placards and manifest information)

Section 15 – Regulatory Information

Section 16 – Other information

Registers

Regulation section 346 requires a PCBU to ensure that a register of hazardous chemicals at the workplace is prepared and kept up to date. The register must be readily accessible to workers involved in using, handling or storing hazardous chemicals and to anyone else who is likely to be affected by a hazardous chemical at the workplace.

The register is simply a list of the product names of all hazardous chemicals used, handled or stored at the workplace accompanied by the current SDS (one that is not more than five years old) for each hazardous chemical listed. It must be updated as new hazardous chemicals are introduced to the workplace or when the use of a particular hazardous chemical is discontinued.

The Regulation does not require a register to include other information such as quantities, classifications, risk assessment references etc. This is at the discretion of the PCBU for their own purposes.

Labelling containers

The Regulation has specific requirements for the information to be contained on a label for a hazardous chemical container. This information is based on the SDS and provides a further opportunity to convey hazard information at the point of use. In general, a label is required for any substance, mixture or article classified as a hazardous chemical under the WHS Regulations. However, there are several types of hazardous chemical that are excluded from the labelling provisions under Regulation 335 or exempted from coverage from all provisions in Part 7.1 of the WHS Regulations.

Duty Holder	Responsibilities
Manufacturers and importers	Ensure that the chemical is correctly labelled.
Suppliers	Must not supply a hazardous chemical to a workplace if the supplier knows, or ought reasonably to know, that the chemical is not correctly labelled
Person who is conducting a business or undertaking	• Ensure that any hazardous chemical that is used, handled or stored at the workplace is correctly labelled in accordance with Schedule 9 of the WHS Regulations, except where: ◦ the hazardous chemical is a consumer product, retaining its original label and only used in workplaces in household quantities and in a way that is incidental to the nature of the work, or ◦ a hazardous chemical is in transit. • Ensure that a hazardous chemical is correctly labelled if the chemical is manufactured at the workplace; or transferred or decanted from the chemical's original container at the workplace. • Ensure, so far as reasonably practicable, that containers are correctly labelled while holding a hazardous chemical. • Ensure that containers that are labelled for holding a hazardous

	chemical are used only for the use, handling or storage of the hazardous chemical. Note: The three duties directly above do not apply if the hazardous chemical is used immediately after being put into the container and the container is thoroughly cleaned after the chemical has been used, handled or stored so it is in a condition it would be in if the container had never contained the chemical. • Ensure, so far as is reasonably practicable, that a hazardous chemical in pipe work is identified by a label, sign or another way on or near the pipe work.
--	--

What is needed on a label?

Regulation section 335, Part 3 of Schedule 9 requires that a hazardous chemical is correctly labelled if the chemical is packed in a container that includes the following:

- is written in English
- the product identifier
- the name, Australian address and business telephone number of either the manufacturer or importer
- the identity and proportion disclosed, in accordance with Schedule 8 of the WHS Regulations, for each chemical ingredient
- any hazard pictogram(s) consistent with the correct classification(s) of the chemical
- any hazard statement(s), signal word and precautionary statement(s) that is consistent with the correct classification(s) of the chemical
- any information about the hazards, first aid and emergency procedures relevant to the chemical, which are not otherwise included in the hazard statement or precautionary statement, and the expiry date of the chemical, if applicable.

Below is an example GHS label containing the full set of workplace labelling information.

Read label before use. Keep out of reach of children

Flammosol
FLAMMABLE LIQUID, TOXIC N.O.S.
(aliphatic hydrocarbons, toxicole)
UN 1992

Contains:
Aliphatic hydrocarbons 95%
Toxicole 5%




4 L

DANGER

Highly flammable liquid and vapour
Toxic if swallowed
Causes skin irritation

IF ON SKIN (or hair): Take off contaminated clothing and wash before re-use. Rinse skin using plenty of soap and water.

If skin irritation occurs: Get medical advice/attention.

IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician. Rinse mouth.

Store locked up in a well-ventilated place. Keep cool.

Dispose of contents/container in accordance with Jurisdictional regulations. Refer to the Safety Data Sheet before use.

Madeup Chemical Company, 999 Chemical Street, Chemical Town, My State. Telephone: 1300 000 000
www.madeup-chemical-company.com.au

In case of fire: Use powder for extinction.

Keep away from sparks and open flames. – No smoking.
Keep container tightly closed.

Ground/bond container and receiving equipment.

Use explosion-proof electrical equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wear protective gloves and eye and face protection.
Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.

Transport labelling versus workplace labelling requirements

Many hazardous chemicals are also classified as dangerous goods for the purposes of transportation. Dangerous goods are classified according to the Australian Dangerous Goods Code (ADG Code)¹. The GHS does not replace the dangerous goods classification system. The dangerous goods classification systems focuses on the immediate or acute harm that can be caused by a chemical release during a transport related incident such as a fire, explosion, or toxic material release. Where applicable, the dangerous goods classification information (e.g., class, packing group and UN number) is provided in Section 14 -Transport in the product's SDS. Both the transport regulations and WHS regulations have requirements for labelling containers and each system recognises the other to avoid duplication. Further information is available in the *Labelling of Workplace Hazardous Chemicals Code of Practice 2011*.

Specific labelling situations

The Regulation provides for labelling hazardous chemicals in special situations where the full requirements do not apply.

Reduced labelling is permitted for hazardous chemicals that are:

- supplied in small containers
- research chemicals or samples for analysis
- decanted or transferred
- not supplied to another workplace, and where the hazards are known to the workers using the chemical
- hazardous wastes
- classified into the explosives hazard class and are not explosive articles.

A summary of the minimum required information to be included on a hazardous chemical label for a number of specific situations described in the Regulation section 342 and Schedule 9 Part 3, is provided in the table below.

Circumstance	Minimum Label elements			
	Product identifier	Pictogram OR hazard statement	Name, Australian address, contact number	Other
Small containers	YES	YES	YES	Most significant items where size permits
Research chemical /sample for analysis	YES	YES		
Decanted for immediate use and cleaned (no residue)	Nil	Nil	Nil	Nil
Decanted into, but not used immediately or is supplied to someone else	YES	YES		
Decanted into for supply to another workplace	Full label required			
Waste	YES- as close as possible	YES	YES	Label SFARP-precautionary approach re composition

¹ The Australian Dangerous Goods (ADG) Code is published by the National Transport Commission and is available at www.ntc.gov.au

Known hazards- Not supplied to another workplace (workers know product & hazards (e.g. SWP, training induction, su- pervision)	YES	YES	
---	-----	-----	--

Unlabelled Containers / Unknown Contents

If you find that a container of a hazardous chemical is not correctly labelled in accordance with the Regulation, you should attach the product identifier to the container. You should not use a hazardous chemical that is not correctly labelled. Store it in isolation until it is appropriately labelled.

If the product identifier of an unlabelled chemical is not known, this should be clearly marked on the container, for example by attaching a label to the container with the statement:

Caution - Do Not Use - Unknown Substance.

You should take steps to either identify and correctly label the unknown chemical or dispose of the contents in accordance with relevant environmental regulations and, where necessary, in consultation with the relevant waste management authority.

RISK MANAGEMENT FOR HAZARDOUS CHEMICALS

Safety duties

The WHS Act includes fundamental duties for specified duty holders to ensure health and safety and to 'manage risks' by eliminating health and safety risks so far as is reasonably practicable, and if it is not reasonably practicable to do so, to minimise those risks so far as is reasonably practicable. Supporting this, the Regulation has further specific duties to manage risks of hazardous chemicals. Of particular note is Regulation section 351 that requires a PCBU to manage risks associated with using, handling, generating or storing of hazardous chemicals at a workplace. It makes specific reference to account for:

- the hazardous properties of the hazardous chemical
- any potentially hazardous reaction (chemical or physical) between the hazardous chemical and another substance or mixture, including a substance that may be generated by the reaction
- the nature of the work to be carried out with the hazardous chemical
- any structure, plant or system of work that:
 - is used in the use, handling, generation or storage of the hazardous chemical
 - could interact with the hazardous chemical at the workplace.

Regulation section 351 adds to the general risk and workplace management duties where sections 32-38 require that a duty holder must:

- a) identify reasonably foreseeable hazards that could give rise to the risk
- b) eliminate the risk so far as is reasonably practicable
- c) if it is not reasonably practicable to eliminate the risk – minimise the risk so far as is reasonably practicable by implementing control measures in accordance with the hierarchy of risk control
- d) maintain the implemented control measure so that it remains effective
- e) review, and if necessary revise all risk control measures so as to maintain, so far as is reasonably practicable, a work environment that is without risks to health and safety.

To ensure a comprehensive approach to managing workplace risks, the legislation includes various consultative mechanisms including:

- WHS Act section 47: requires that you consult, so far as is reasonably practicable, with workers who carry out work for you who are (or are likely to be) directly affected by a work health and safety matter.
- WHS Act section 48: If the workers are represented by a health and safety representative, the consultation must involve that representative.
- WHS Act section 46: requires that you consult, co-operate and co-ordinate activities with all other persons who have a work health or safety duty in relation to the same matter, so far as is reasonably practicable.

WHS Act section 46 can be particularly relevant in regards to the safe management of hazardous chemicals because a workplace may sometimes share responsibility for a health and safety matter (e.g. emergency planning and response) with other business operators who are involved in the same activities or who share the same workplace. For example, engaging a contractor to maintain a hazardous chemical storage and handling system such as a tank installation, or industrial refrigeration system. It is important to find out who is doing what and work together with the multiple duty holders in a co-operative and co-ordinated way so that all risks are eliminated or minimised as far as reasonably practicable.

When a workplace is entering into contracts, consideration should be taken of the roles and responsibilities for ensuring health and safety of all relevant parties, discussing any safety issues that may arise and how they will be dealt with. Remember that responsibilities cannot be transferred to another person. Further guidance on consultation is available in the *Work health and safety consultation, co-operation and co-ordination Code of Practice*.

Risk management process

The first step in managing hazardous chemical risks involves identifying all the chemicals that are used, handled, stored or generated at your workplace in consultation with workers. The identity of chemicals in the workplace can usually be determined by looking at the label and the SDS, and reading what ingredients are in each chemical or product. In some cases, a chemical may not have a label or an SDS, for example where fumes are generated in the workplace from an activity such as welding. Hazardous chemicals that are contained in plant forming part of a manufacturing process, such as a piping system, must also be identified.

Some processes will produce hazardous chemicals as by-products or waste. These hazards may not be easily identified when generated at the workplace, for example hydrogen sulphide in a sewer or diesel exhaust fume from truck engines. Information on by-products may be available from a SDS, but not always. You should find out what hazardous chemicals may be produced from work activities, for example: use of welding rods may liberate toxic fumes and vapours, grinding metals release toxic metal dust or fumes, off-gassing of solvent vapours from glues used to manufacture timber products such as medium density fibre (MDF), and dusts released from machining timbers are hazardous to health or can present a dust explosion risk. If you produce or generate hazardous chemicals in the workplace, you must manage the risks associated with those chemicals.

Key references for guidance on the general risk management process is available in:

- *How to manage work health and safety risks code of practice*.

Further guidance on managing risks of hazardous chemicals is available in:

- *Managing risks of hazardous chemicals in the workplace code of practice*.

The concept of minimising risk so far as reasonably practicable

The Regulation uses the term ‘reasonably practicable’ in considering the standard of health and safety that a PCBU is expected to meet under the WHS legislation, including in Part 7.1 hazardous chemicals. This standard and what is required to meet it in relation to a health and safety duty are set out in section 18 of the Act. This is an important concept to understand to help determine to what extent risk control measures must be implemented.

In this context, reasonably practicable means that which is, or was at a particular time, reasonably able to be done to ensure health and safety, taking into account and weighing up all relevant matters including:

- the likelihood of the hazard or the risk concerned occurring
- the degree of harm that might result from the hazard or the risk
- what the person concerned knows, or ought reasonably to know, about the hazard or risk, and ways of eliminating or minimising the risk
- the availability and suitability of ways to eliminate or minimise the risk, and
- after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk.

An important contributor to achieving the standard of minimising risk so far as reasonably practicable is to what extent a person concerned knows or ought reasonably to know, about the hazard or risk and any ways of eliminating or minimising the risk. This is commonly referred to as the state of knowledge.

A duty-holder can gain this knowledge in various ways, for example by:

- consulting their workers and others in the industry
- undertaking risk assessments
- analysing previous incidents
- complying with relevant Regulations and Codes of Practice and other sources of information such as:
 - the regulator and its inspectors
 - reputable technical standards, such as those published by Standards Australia
 - industry publications, and
 - published scientific and technical literature.

For further information on the meaning of minimising risk so far as reasonably practicable, refer to the Safe Work Australia publication: *Interpretive guideline- Model Work Health and Safety Act, The meaning of ‘reasonably practicable’* available at

<https://www.safeworkaustralia.gov.au/doc/interpretive-guideline-model-work-health-and-safety-act-meaning-reasonably-practicable>

Australian standards provide a reputable source of technical guidance to manage the risks of storing, handling and using hazardous chemicals in the workplace. Risk control measures are discussed in the next section. Refer to the module on Occupational Health and Hygiene for information on managing risks of exposure to hazardous chemicals in the workplace.

Examples of relevant Australian Standards applicable to the safe storage and handling of hazardous chemicals (incorporates dangerous goods):

- AS1596 Storage & Handling of Liquefied Petroleum Gas
- AS1894 Storage & handling of non-flammable cryogenic & refrigerated liquids
- AS1940 Storage & Handling of Flammable & Combustible Liquids
- AS2022 SAA Anhydrous Ammonia Code
- AS2030 The approval, filling, inspection, testing & maintenance of cylinders for the storage & transport of compressed gases

- AS2187 Explosives - Storage, Transport & Use (Parts 1 & 2)
- AS2243 Safety in Laboratories (Parts 1 - 10 inclusive)
- AS2381 Electrical Equipment for Explosive Atmospheres
- AS60079 series Classification of Hazardous Areas
- AS2507 Storage & handling of pesticides
- AS2714 Storage & handling of oxidizing materials - Class 5.2 (organic peroxides)
- AS2927 Storage & handling of liquefied chlorine gas
- AS3780 Storage & handling of Corrosive Substances
- AS3961 Liquefied Natural Gas
- AS4081 Storage, handling & transport of liquid & liquefied poly-functional isocyanates
- AS4289 Oxygen & Acetylene gas reticulation systems
- AS4332 Storage & handling of gases in cylinders
- AS4452 Storage & handling of Toxic Substances

RISK CONTROL MEASURES

There are a number of ways to control the risks associated with hazardous chemicals. Some control measures are more effective than others. Control measures can be ranked from the highest level of protection and reliability to the lowest. This ranking is known as the hierarchy of control and has been included in the Regulation as the methodology to implement risk control measures.

You must always aim to eliminate a hazard and associated risk first. If this is not reasonably practicable, the risk must be minimised by using one or more of the following approaches:

- substitution
- isolation
- implementing engineering controls.

If a risk then remains, it must be minimised by implementing administrative controls, so far as is reasonably practicable. Any remaining risk must be minimised with suitable personal protective equipment (PPE).

Administrative control measures and PPE rely on human behaviour and supervision and when used on their own, tend to be the least effective ways of minimising risks.

In regards to hazardous chemicals, Regulation section 352 specifically requires that in managing risks the person must have regard to the following:

- a) the hazardous properties of the hazardous chemical;
- b) any potential hazardous chemical or physical reaction between the hazardous chemical and another substance or mixture, including a substance that may be generated by the reaction;
- c) the nature of the work to be carried out with the hazardous chemical;
- d) any structure, plant or system of work—
 - (i) that is used in the use, handling, generation or storage of the hazardous chemical; or
 - (ii) that could interact with the hazardous chemical at the workplace.

Guidance on the general risk management process is available in the *How to manage work health and safety risks code of practice*. In addition to this, the *Managing risks of hazardous chemicals in the workplace code of practice* provides further chemical hazard specific risk management guidance. These codes complement each other and collectively provide a comprehensive approach to managing risks from hazardous chemicals.

While the Regulation fundamentally adopts a risk management approach to managing workplace risks, a number of specific risk control measures are also included. An overview of these is provided below.

Safety signs

Along with container labels and the provision of SDS, safety signs and placards contribute to the hazard communication system at a workplace. Safety signs can be used to provide a range of safety and warning messages to persons who may be affected by a hazardous chemical. Placards are a specific type of safety sign that alerts persons to a particular type and minimum quantity of a hazardous chemical that is present at the workplace.

Regulation section 353 requires that if a safety sign is required to control an identified risk, the safety sign must meet certain conditions such as:

- warn of a particular hazard associated with the hazardous chemicals; or
- state the responsibilities of a particular person in relation to the hazardous chemicals.
- be located next to the hazard; and
- clearly visible to a person approaching the hazard.

Guidance on suitable safety signs for specific circumstances are described in relevant Australian Standards for hazardous chemicals. Examples could include:

- NO UNAUTHORISED ACCESS
- DANGER NO SMOKING NO NAKED LIGHTS
- EMERGENCY STOP INFORMATION
- RESPIRATOR MUST BE WORN

Placards

Placards are a special type of safety sign that contains information about the hazardous chemical stored in the container or storage area and are to be displayed in a prominent place, or next to a container or storage area for hazardous chemicals at a workplace. Placards serve to:

- alert people (workers, contractors, visitors and emergency service personnel) to the presence of hazardous chemicals
- identify hazardous chemicals stored in bulk (e.g. tanks)
- identify areas where significant quantities of hazardous chemicals in packages are stored
- identify the hazards of goods present, and indicate the required emergency actions for hazardous chemicals in tanks through the use of the HAZCHEM code.

Placard has specific meaning under the Regulation because they have a prescribed form and dimension and are required when the prescribed placard quantity referred to in Schedule 11 of the Regulation, table 11.1, column 4 for that hazardous chemical is exceeded at the workplace.

When a prescribed placard quantity is exceeded at the workplace, the regulation requires:

- an outer warning placard be erected at the entrance/s to the workplace
- individual storage areas have the appropriate dangerous goods class label/s erected
- bulk containers (i.e. tanks) have the appropriate bulk container placard erected on or adjacent to the container.

Further information is available in the WHSQ publication: Placarding for storage of hazardous chemicals under the Work Health and Safety Act 2011. https://www.worksafe.qld.gov.au/data/assets/pdf_file/0020/83180/placard-storage-haz-chem.pdf

Note: while the WHS Regulation has introduced the GHS for classification and labelling of hazardous chemicals, the associated GHS pictograms are not referred to for placarding purposes. That is, GHS pictograms are not used for placarding of tanks and storage areas. Class labels from the ADG Code have been retained for the purposes of identifying hazardous chemical storages at workplaces. Refer to the WHSQ publication, *Hazardous chemicals- placard and manifest information* which shows the ADG Code class labels that will be applicable for the equivalent GHS hazard categories to which the Regulation applies, available at https://www.worksafe.qld.gov.au/data/assets/pdf_file/0007/83149/hazardouschem-placardinfo-manifestquant.pdf.

IDENTIFICATION OF REACTIONS

Some hazardous chemicals are reactive in nature and can create new hazards if it interacts with other substances or materials (not just other hazardous chemicals).

Fires and explosions can occur as a result of chemical reactions. Many chemical reactions are exothermic – that is they give off heat during the reaction. This heat can act as an ignition source igniting any fuels present, pressure can build up in enclosed systems (for example, containers, flasks, pressure vessels) causing the container to rupture or even explode.

Regulation 354 requires that any risk of a physical or chemical reaction must be identified. This is an important to ensure all hazards are identified and the associated risks can then managed. It also requires that all reasonable steps are taken to ensure that a hazardous chemical used, handled, generated, or stored so as to not contaminate food, food packaging or personal use products (e.g. cosmetics, face washers, drink containers, food preparation areas).

You must assess any situation where incompatible chemicals could interact and cause a dangerous or uncontrolled violent reaction.

Information on hazardous reactions, incompatibilities and conditions to avoid are available in the product's SDS. Guidance on separation and segregation of incompatible goods is available from AS3833: *The storage and handling of dangerous goods in packages and intermediate bulk containers*.

Segregation tools are available from various sources to assist in identifying incompatibilities. It is important to recognise that such tools (i.e. incompatibility charts), and serve only as a guide and a quick reference to highlight potential hazards. These charts cannot reliably account for the 100,000's of combinations that may occur and exceptions often exist. Ensure that potential interaction of incompatible combinations are assessed as part of the risk management process. Information on reactive hazards can be sought from the product's SDS. WHSQ provides a segregation tool available at <https://www.worksafe.qld.gov.au/injury-prevention-safety/hazardous-chemicals/managing-incompatible-goods/segregation-tool>.

Fire and explosion prevention

Regulation section 355 requires specific controls for prevention of fire and explosion associated with hazardous chemicals. A PCBU must ensure an ignition source is not introduced into a hazardous area² (from outside or within the space). A hazardous area should be identified and classified by a competent person and a plan detailing the extent of the areas be kept as a

² Hazardous area is defined in the Regulation as an area in which an explosive gas/combustible dust is present in the atmosphere in a quantity that requires special precautions to be taken for the construction, installation and use of plant.

reference and be used to support the implementation of appropriate fire and explosion prevention measures.

Regulation section 52 requires a PCBU to manage risks to health and safety associated with an ignition source in a hazardous atmosphere. With respect to flammable substances, a hazardous atmosphere is an atmosphere where the concentration of flammable gas, vapour, mist, or fumes exceeds 5% of the lower explosive limit (LEL) for the substance. The LEL is equivalent to the lower flammability limit or LFL and may be found in Section 9- Physical and chemical properties, in a product's safety data sheet.

Key control measures for managing these risks include:

- identifying, classifying and managing hazardous areas
- controlling emissions of flammable vapours, gases and mists (see below)
- use of ventilation systems to control vapours during both normal and abnormal conditions (e.g. leak or spill)
- eliminating ignition sources from hazardous areas (see below)
- installing systems to detect leaks of flammable gases or vapours and enable response actions to be taken
- using intrinsically safe or flameproof equipment
- substituting flammable materials for ones that are less flammable or combustible
- ensuring incompatible materials (e.g. oxidizers and oils) are separated or segregated
- reducing quantities of flammable and combustible materials, including items that contribute to the fire load but that are not hazardous chemicals themselves (e.g. wooden pallets, oil)
- ensuring equipment used in handling flammable hazardous chemicals is maintained in accordance with manufacturer's instructions
- adopting good housekeeping practices to minimise accumulation of combustible dusts.

Controlling flammable substance emissions

Accumulation of vapours, gases, mists creates the potential for a hazardous area to exist. Vapour emissions resulting from processes can be minimised by:

- the use of enclosed container and transfer systems and vapour recovery connections
- keeping lids open only for the minimum period required for transfer
- minimising exposed surface areas (e.g. area of spread for leaked or spilled liquid)
- avoidance of splash filling
- minimising the temperature of liquids being processed or transferred
- providing ventilation, e.g. mechanical extraction for all sources of vapour and vent to a safe area.

When heated, the vapour pressure of flammable and combustible materials may increase resulting in higher vapour emissions. Containers of hazardous chemicals should therefore be stored away from sources of heat (e.g. heaters or other heating appliances). Heat may also deteriorate packaging and increase the risk of failure of the container and product loss. Hot surfaces may also exceed a substance's auto-ignition temperature.

Controlling ignition sources

Controlling potential sources of ignition in a hazardous area may be achieved by:

- use of suitably-rated electrical equipment (e.g. intrinsically safe or flame-proof)
- ensuring electrical equipment is effectively maintained where poorly maintained electrical equipment can present a significant risk for example through worn brushes
- ensuring electrical equipment is properly earthed
- ensuring the auto-ignition temperature of the hazardous chemical is considered as some hazardous chemicals may ignite spontaneously above certain temperatures
- implementing administrative controls such as permit systems preventing hot work (for example, welding) in these areas (see below).

Where electrical installations or equipment are required to be located or used in a hazardous area e.g. lighting, mixers and stirrers, pumps, control systems, forklift trucks, detectors, torches etc, these items must be designed and constructed so that they cannot release energy within the hazardous area that is sufficient to cause an ignition. That is, such equipment must be suitably rated for use in a hazardous area.

Such design and construction techniques include 'intrinsically safe' or 'flameproof/encapsulated' equipment. Any equipment designed and constructed to operate within a hazardous area must also be supplied with documentation stating which zone (i.e. 0, 1 or 2) it is suitable to operate within. It is a PCBU's duty to ensure equipment within a hazardous area is consistent with the zone assigned to the area.

Safe work procedures must also account for any hazardous areas. For example adopting a hot work permit system to conduct maintenance and repair activities (see below).

Controlling static electricity

Static electricity can be created from a range of activities including the transfer of hazardous chemicals. Information on control of static electricity can be found in AS/NZS 1020:1995 The control of undesirable static electricity and includes methods such as earthing and bonding to ensure any build-up of static electricity is dissipated before a hazardous electrical discharge can occur.

Controlling hot work

Hot work is any process involving grinding, welding, brazing, oxy cutting, heat treatment or any other similar process that generates heat or continuous streams of sparks. Undertaking hot work in areas where flammable or combustible chemicals or other materials are present creates a significant risk of fire or explosion. Conducting hot work on containers such as drums, tanks and pipes that have not been properly decontaminated is a common cause of serious incidents. A hot work permit system is a system designed to eliminate or minimise risks from these activities by controlling when and how hot work is undertaken in these areas.

More information on hot work permit systems is available in the following Australian Standards:

- AS 1940:2004 The storage and handling of flammable and combustible liquids
- AS 2865:2009 Confined spaces
- AS 1674.1:1997 Safety in welding and allied processes – Fire precautions

More information on hazardous areas can be obtained from the following Australian Standards:

- AS/NZS 60079.10.1:2009 Explosive atmospheres – Classification of areas – Explosive gas atmospheres (IEC 60079-10-1, Ed.1.0(2008) MOD)
- AS/NZS 60079.10.2:2011 Explosive atmospheres – Classification of areas – Combustible dust atmospheres

The Electrical Safety Act 2002 has requirements for hazardous area electrical installations.

Oxidising agents can contribute to fire and explosion risks. In relation to working with oxidising agents, information can be found in conAS4326: The storage and handling of oxidising agents.

Hazardous atmospheres are often associated with confined spaces. More information on hazards and risk controls associated with confined spaces can be found in the *Confined Spaces Code of Practice 2011*.

KEEPING HAZARDOUS CHEMICALS STABLE

Some hazardous chemicals are inherently unstable or highly reactive, or they can become unstable under certain conditions during use, often in a deliberate process. This is mainly for hazardous chemicals that are dangerous goods, however other hazardous chemicals may also present a risk if stability is not maintained.

Always check the product's SDS for any conditions that may affect its stability and conditions to avoid. For example:

- maintain specified proportions of ingredients, goods and other components that constitute the hazardous chemicals, for example. phlegmatizers, diluents, solvents, wetting agents, desensitisers, inhibitors and/or other adulterants
- include a stabilising ingredient where appropriate
- keep the hazardous chemicals within any control temperature range where necessary
- keep the hazardous chemical and the packaging dry, unless the packages themselves are impervious to moisture.

Some hazardous chemicals may provide an expiry date on the label and SDS. Where a chemical has passed its expiry date it should not be used, but be disposed of in accordance with manufacturer's instructions and local laws

Storage and handling systems

A storage and handling system includes things like: bottles, packages, gas cylinders, drums, carboys, intermediate bulk containers (IBCs), tanks, vessels, reaction vessels, blending and mixing equipment, and associated pipework and connections.

Performance characteristics of packages are specified in the Australian Dangerous Goods (ADG) code. Information on the design, construction, location and installation of bulk containers for hazardous chemicals can be found in various Australian Standards. A few examples include:

- AS1692: Steel tanks for flammable and combustible liquids
- AS1940: The storage and handling of flammable and combustible liquids
- AS4897: The design, installation and operation of underground petroleum storage systems
- AS/NZS 2022: Anhydrous ammonia – Storage and handling

- AS3780: The storage and handling of corrosive substances

Regulation section 363 requires a PCBU to ensure that a system used at their workplace for the use, handling or storage of hazardous chemicals is used only for the purpose for which it was designed, manufactured, modified, installed or supplied.

A PCBU must also ensure that:

- that all operations in regard to the use of a storage and handling system cause no harm or injury to workers and other persons at their workplace
- that sufficient information, training and instruction is given to a person who operates, tests, maintains or decommissions a hazardous chemical storage and handling system. Training may include safety features included in the design, required maintenance regimes, instruction manuals, design specifications and safe working parameters (e.g. temperature and pressure).

When a storage and handling system is a bulk container, the container and its associated pipework must have stable foundations and supports, and are secured to the foundations and supports to prevent any movement between the container and pipework or attachments to prevent damage.

Identification of contents

The hazardous chemical contents of storage and handling systems must be identified and specific requirements apply depending on the type of storage and handling system. For example:

- packages require correct labelling (section 342)
- bulk containers require tank placards displaying the proper shipping name, UN Number, Hazchem code and dangerous goods class label as specified in the ADG Code (section 350)
- pipework is identified by a label, sign or another way on or near the pipework (section 343).

Preventative maintenance and integrity testing

Systems for the storage and handling of hazardous chemicals generally require on-going maintenance and testing to ensure that they continue to be safe for the intended use and that they maintain their operational integrity. Such systems include, but are not limited to, reaction vessels, chemical transfer lines, pumps, spill compounds and bunds, and storage tanks.

To ensure that the integrity of hazardous chemical handling systems is preserved, planned maintenance programmes should be designed and carried out at regular intervals, consistent with manufacturer's instructions or advice provided by other competent persons. If this is not reasonably practicable, inspections and maintenance should be carried out annually.

Examples of preventative maintenance and integrity testing might include:

- Inspection of glass linings on steel or metal alloy reaction vessels to ensure there are no cracks or holes which might allow contact of incompatible materials with the metal vessel.
- Regular checking of bursting (rupture) discs and pressure-relief systems on pressure vessels to ensure they have not 'blown' and are of the correct pressure rating for the work being performed. Bursting or rupture discs are safety features for pressure systems that help to prevent damage or injury from over-pressurisation.
- Checking spill bunding walls for cracks or other signs of wear to ensure that, in the event of a spill, the bunding will not leak or fail.
- Checking for signs of corrosion or degradation on tanks, pipework and compressed gas fittings.

Preventative maintenance and integrity testing may range from visual inspections through to more sophisticated techniques such as non-destructive testing (NDT) and risk-based inspections (RBI). If preventative maintenance checks show that the integrity of any chemical handling system is in

doubt or not performing as it is intended, repair or replacement of the faulty system should be carried out as soon as practicable and before its next use.

Guidance on appropriate levels and frequency of testing and maintenance should be first sought from the systems manufacturer, supplier and/or importer. These duty holders may have more stringent requirements for maintenance and repair regimes than those specified in industry standards. A range of Australian Standards exist for specific systems such as pressure vessels and storage tanks. Examples are provided below:

- AS/NZS 3788: Pressure equipment – In Service Inspection
- AS 3873: Pressure equipment- Operation and Maintenance
- AS1851: Maintenance of fire protection systems and equipment

Where a hazardous chemical storage and handling system meets the definition of plant under the Regulation, section 213 provides for minimum requirements for maintenance and inspection of plant which requires that:

- the maintenance, inspection and, if necessary, testing of the plant is carried out by a competent person
- the maintenance, inspection and testing must be carried out—
 - (a) in accordance with the manufacturer's recommendations, if any; or
 - (b) if there are no manufacturer's recommendations, in accordance with the recommendations of a competent person; or
 - (c) in relation to inspection, if it is not reasonably practicable to comply with paragraph (a) or (b), annually.

CONTAINING AND MANAGING SPILLS

Regulation section 357 requires a PCBU to ensure, so far as is reasonably practicable that where there is a risk of a spill or leak of a hazardous chemical in a solid or liquid form, provision is made in each part of the workplace where a hazardous chemical is used, handled, stored or generated for a spill containment system that contains within the workplace any spill or leak of a hazardous chemical and any resulting effluent.

When a spill, leak or accidental release of hazardous chemicals occurs, appropriate actions must be taken to contain the hazardous chemicals within the workplace.

The spill containment system must describe how to contain, clean up and dispose of the spill or leak and any resulting effluent. The system must not create a hazard by bringing together different hazardous chemicals that are not compatible or that would react together to cause a fire, explosion, harmful reaction or evolution of flammable, toxic or corrosive vapour.

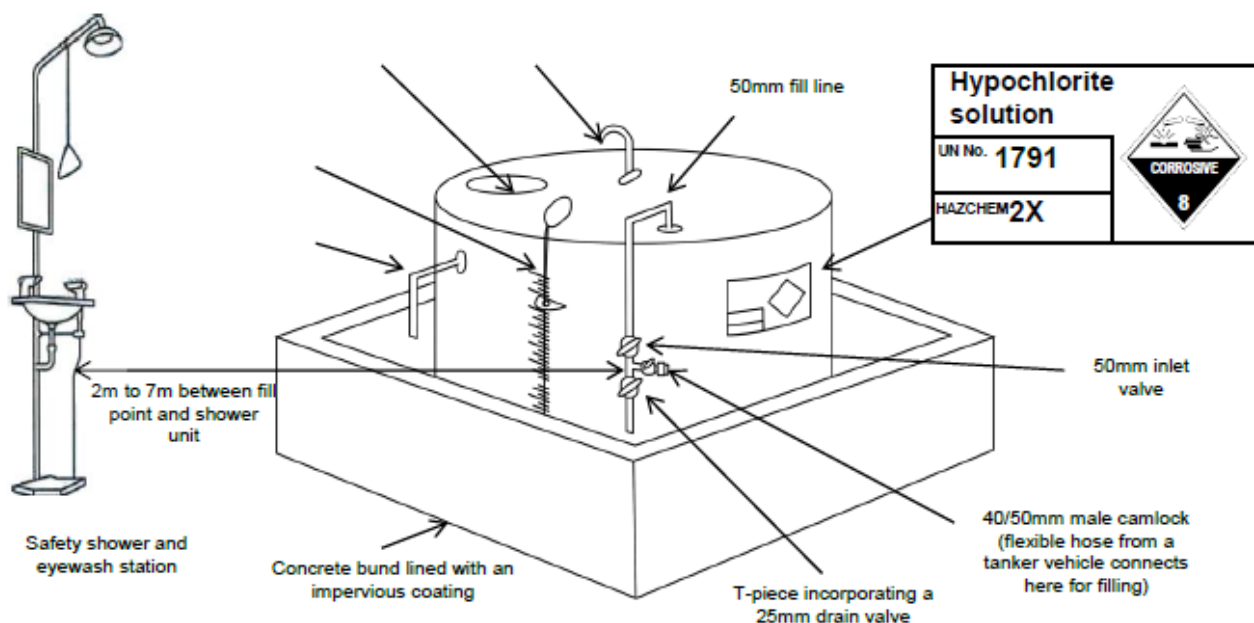
Leaving containers open when not in use is one of the main causes of spills and can also lead to generating hazardous atmospheres and fire risks. Procedures, training and supervision should ensure containers are sealed when not in use.

Any spill containment system should be large enough to ensure that all spills can be held safely until cleaned up. Factors you should consider when designing a spill containment system include:

- the nature of the hazardous chemicals (whether liquid or solid)
- the quantity of the hazardous chemicals
- the size of the largest container or reasonably foreseeable largest spill
- the potential impact if the hazardous chemicals escape to the environment
- whether it is necessary to provide for the management of firewater at an incident
- a separate spill containment is provided for incompatible goods
- the materials used to construct the containment system, as well as any materials used for absorption, are compatible with the hazardous chemicals

- other materials in the vicinity that will prevent contamination of groundwater or soil
- the system's integrity will be maintained in any reasonably foreseeable incident.

For large quantities of hazardous chemicals, bunding may be required. Bunding should be designed and constructed in accordance with the relevant Australian Standard specific to the type of hazardous chemical. Australian Standards provide design and construction information tailored to the storage and handling system. The figure below illustrates an example tank installation incorporating a spill compound (i.e. bund) as per AS3780: *The storage and handling of corrosive substances*³.



PROTECTING AGAINST DAMAGE

To prevent damage from the movement of the structure or plant including any attached pipe work or equipment, you should ensure that structures or plant used for the storage or handling of hazardous chemicals are appropriately located and fixed to stable foundations.

Measures required for preventing or controlling impact normally depends on the nature of risks. Impact protection measures may be necessary for:

- structures containing large quantities of hazardous chemicals
- plant and equipment including storage and process vessels, associated pipe work, pumps and controls
- storage areas (including transit storage) for packages, IBCs and associated shelves and racks
- exposed parts of the fire protection systems.

The most effective ways to protect containers, pipework, pumps and attachments from impact is to locate the containers away from trafficable areas or prevent vehicle access. Installation of crash protection measures, such as bollards and guardrails is an alternative means of impact protection. These should be designed to absorb the energy of any reasonably foreseeable impact and minimise the likelihood of injury to anyone involved in the incident.

³ Taken from WHSQ publication: A guide for pool chemical retailers available at https://www.worksafe.qld.gov.au/_data/assets/pdf_file/0011/82739/guide-for-pool-chemical-retailers.pdf

EMERGENCY PLANNING

The purpose of emergency planning is to reduce the effects of an emergency that occurs at a workplace involving hazardous chemicals.

An emergency may involve:

- an explosion and/or fire
- the harmful reaction or the evolution of flammable, corrosive or toxic gases and vapours
- the escape, spillage or leakage of a hazardous chemical.

The Regulation has specific duties in regard to emergency plans at workplaces. Section 43 requires all workplaces to prepare, maintain and implement an emergency plan that provides for the following:

- emergency procedures including an effective response to an emergency
- evacuation procedures
- notifying emergency service organisations at the earliest opportunity
- medical treatment and assistance
- effective communications
- testing of the emergency procedures including the frequency of testing
- information, training and instruction to relevant workers in relation to implementing the emergency procedures.

Preparing an emergency plan

When preparing an emergency plan, the PCBU must consider all relevant matters including:

- the nature of the work being carried out at the workplace
- the nature of the hazards at the workplace
- the size and location of the workplace
- the number and composition of the workers and other persons at the workplace.

Section 43 applies to all workplaces and is not related to quantity of hazardous chemicals. These requirements are very broad and encompass all emergencies including those that may be initiated by or involve hazardous chemicals. While all workplaces are expected to address fire and evacuation requirements for offices and general use buildings (e.g. fire safety legislation), where hazardous chemicals are involved, more specific emergency planning will be required. Refer to the information sources below for further information on developing and implementing effective emergency plans involving hazardous chemicals.

Further information:

- Chapter 6 Emergency preparedness in Managing risks of hazardous chemicals in the workplace code of practice.
- Emergency planning: A guideline for hazardous industry available at www.worksafe.qld.gov.au
- Emergency Management sections of the various Australian Standards for dangerous goods
- AS3745: Planning for emergencies in facilities.

MANIFESTS

The Regulation section 347 requires that a manifest of Schedule 11 Hazardous Chemicals be kept readily available for the emergency services. A manifest is a written summary of specific types of hazardous chemicals with physicochemical hazards and acute toxicity that are used, handled or stored at a workplace. It contains more detailed information than a register of hazardous chemicals as its primary purpose is to provide the emergency services organisations with information on the quantity, classification and location of hazardous chemicals at the workplace. It also contains information such as site plans and emergency contact details.

The content of a manifest must comply with the requirements of Schedule 12 of the Regulation and it must be updated as soon as practicable after any change to the amount or types of chemicals being used, stored, handled or generated at the workplace.

For guidance on the content and preparation of a manifest and site plan, refer to the WHSQ publication *Guide to Manifest requirements for hazardous chemicals* available at https://www.worksafe.qld.gov.au/data/assets/pdf_file/0006/82887/manifest-guide-hazchem.pdf. The guide provides an example manifest and site plan.

Note: A copy of the manifest must be submitted with the notification for a manifest quantity workplace that is required by the Regulation section 348. Refer to section on notification requirements for hazardous chemicals. Workplaces that exceed the prescribed manifest quantities and required to notify WHSQ, are referred to a manifest quantity workplaces (MQW).

Manifest quantity workplaces (MQW)

In addition to notifying WHSQ of their existence, and developing an manifest, Regulation section 361 requires a MQW to provide a copy of the emergency plan prepared under part 3.2, division 4 for the workplace to the Queensland Fire and Rescue Service. For further information from QFES, refer to <https://www.qfes.qld.gov.au/planning/Pages/default.aspx>.

Further information on MQW is available at <https://www.worksafe.qld.gov.au/injury-prevention-safety/hazardous-chemicals/specific-hazchem-workplaces/manifest-quantity-workplaces-mqw>

FIRE PROTECTION AND FIREFIGHTING EQUIPMENT

Regulation section 359 requires a PCBU to ensure the workplace is provided with fire protection and firefighting equipment that is designed and built for the types of hazardous chemicals at the workplace:

- in the quantities in which they are used, handled, generated or stored, and
- the conditions under which they are used, handled, generated or stored, having regard to:
- the fire load of the hazardous chemicals
- the fire load from other sources
- the compatibility of the hazardous chemicals with other substances and mixtures at the workplace.

In Queensland, fire protection and firefighting equipment must be compatible with equipment used by the Queensland Fire and Rescue Services. It must be properly installed, tested and maintained with a dated record kept of the latest testing results and maintenance until the next test is conducted (refer to section 359).

If a part of the equipment provided at the workplace becomes unserviceable or inoperative, the implications must be assessed and alternative measures are to be taken to manage the risks. Affected equipment must be returned to full operation as soon as practicable.

Regulation section 360 requires that equipment is always available at the workplace for use in an emergency.

MAINTAINING CONTROL MEASURES

Regulation section 37 requires that a PCBU ensure that the implemented control measures remain effective. This includes checking that the control measures are fit for purpose; suitable for the nature and duration of the work and are installed and used correctly.

Maintenance of control measures may involve the following:

- regular inspections of control measures
- supervision to ensure workers are using the control measures properly
- preventative maintenance and testing programs for chemical storage and handling systems
- periodic air monitoring to ensure that engineering and administrative controls remain effective.

Maintenance procedures should include mechanisms for workers to report defective control measures as soon as they are identified so that prompt remedial action can be taken. Refer to section on storage and handling systems which refers to preventative maintenance and integrity testing to help prevent leaks and spills.

REVIEWING CONTROL MEASURES

Control measures must be reviewed (and revised if necessary) to ensure they remain effective. The Regulation has specific duties in regards to reviewing control measures. Regulation section 38: A duty holder must review and, as necessary, revise control measures implemented so as to maintain, so far as is reasonably practicable, a work environment that is without risks to health or safety.

Regulation section 352 requires that a PCBU ensure that any measures implemented to control risks in relation to a hazardous chemical at the workplace are reviewed and as necessary revised. Specific triggers to review are:

- following any change to the safety data sheet for the hazardous chemical or the register
- health monitoring report contains information in regards to exposure and recommended remedial action
- if atmospheric monitoring indicates that the airborne concentration of a hazardous chemical exceeds the relevant exposure standard
- at least once every five years.

Under the general duties to manage workplace risks, a range of broader circumstances may trigger a review of these including, but not limited to:

- a proposed change to the types and quantities of hazardous chemicals at the workplace
- change to a system of work, a process or a procedure or work environment
- the results of consultation indicate that a review is necessary
- a health and safety representative requests a review (conditions apply, refer)
- an incident or near miss occurs that has placed persons at risk

When reviewing the control measures, consultation must occur with workers and their health and safety representatives.

NOTIFICATION REQUIREMENTS FOR HAZARDOUS CHEMICALS

Under the Regulation, a notification must be submitted to Workplace Health and Safety Queensland regarding the use, handling or storage of hazardous chemicals in the following circumstances:

Notification of hazardous chemicals above manifest quantities

The Regulation section 348 requires a PCBU to submit a notification if hazardous chemicals are in excess of manifest quantities prescribed in column 5 of schedule 11 of the WHS Regulation are used, stored or handled at a workplace. Notification can be made using Form 73 – Notification of a manifest quantity workplace.

To complete notification *Form 73 – Notification of a manifest quantity workplace* must also include a copy of the Manifest of hazardous chemicals (i.e. an emergency information pack kept in a red HAZMAT box at the front entrance of a workplace). Manifests must comply with Schedule 12.

In addition to notifying WHSQ as a manifest quantity workplace, the PCBU is required under section 361 of the Regulation to send a copy of their emergency plan to Queensland Fire and Rescue Service (QFRS). Refer to Queensland Fire and Rescue Service for more information on emergency plans and where to position a HAZMAT box available at <https://www.qfes.qld.gov.au/planning/Pages/default.aspx>.

Notification of the presence of schedule 15 chemicals in excess of 10 per cent of the prescribed quantities for a major hazard facility

Under section 536 of the WHS Regulation, the operator of a facility storing or handling Schedule 15 chemicals in quantities that may exceed 10 per cent of the prescribed quantity must submit a notification. The notification can be made using Form 69 – Notification of a facility exceeding 10 per cent of Schedule 15 threshold.

Construction or operation of a hazardous chemicals pipeline that enters a public place

Under section 390 of the WHS Regulation, a pipeline builder must submit a notification when intending to build a pipeline that will cross into a public place and will be used to transfer a Schedule 11 hazardous chemical. Under section 391 the operator of an existing hazardous chemicals pipeline passing through a public place must submit a notification providing details of the supplier, receiver and dangerous goods classification of materials transferred through that pipeline. In each case notification can be made using Form 70 – Notification of a hazardous chemicals pipeline.

Presence of an abandoned underground tank that has been used to store flammable gas or flammable liquid

Under section 367 of the WHS Regulation, a person conducting a business or undertaking must submit a notification if an underground, partially underground or fully mounded tank intended to store flammable gas or flammable liquid has not been used in the past two years or if the person has decided that the tank will no longer be used in the future. Notification can be made using Form 72 – Notification of an abandoned tank.

CARCINOGENS

Restricted carcinogens remain in use in industry and other workplaces. You must be authorised to use, handle or store a restricted carcinogen mentioned in schedule 10, table 10.2, for the purpose shown in column 3 of table 10.2 of the Regulation.

If your workplace uses, handles or stores prohibited or restricted carcinogenic hazardous chemicals, you may be required to be authorised for those purposes under chapter 7 of the Regulation.

Version	Date	Author
1	30/06/2018	WHSQ