STANDARD OPERATING PROCEDURE

SAFETY Everyone. Everywhere. Every day

HAZARDOUS CHEMICALS

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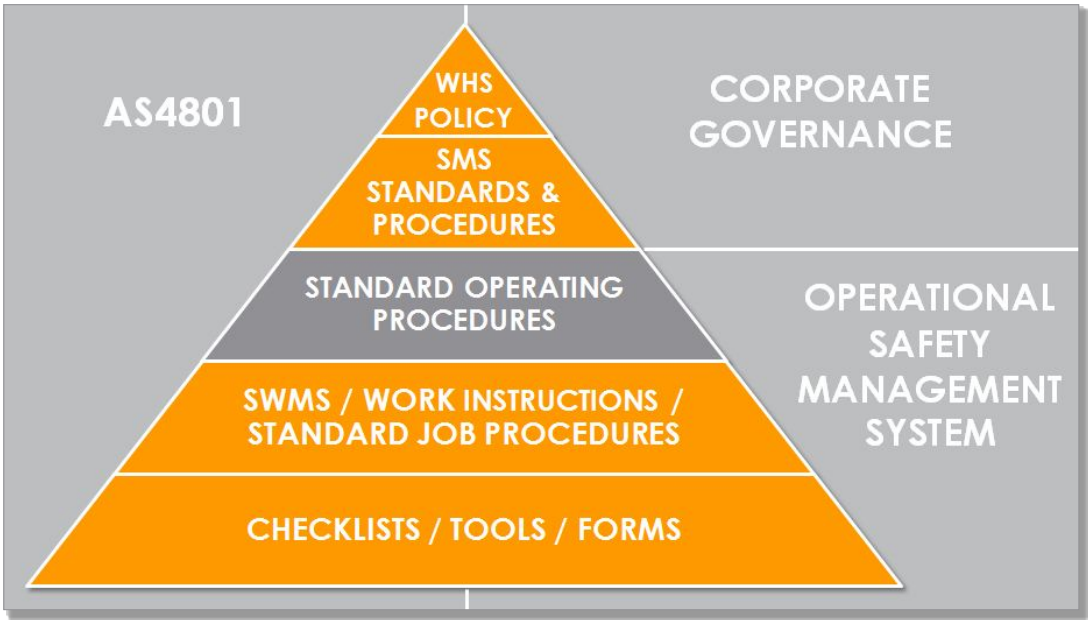
1. SMS DOCUMENT HIERARCHY



2. PURPOSE

This standard operating procedure (SOP) documents Queensland Urban Utilities (QUU) approach to the management of hazardous chemicals. This procedure will outline processes related to purchasing, transport, storing and handling of hazardous chemicals, including emergency management and health surveillance.

The overall purpose of this procedure is to ensure that risks associated with the handling and storage of chemicals are adequately managed in order to minimise the risk of injury or harm to workers, the environment or property including:

- substances, mixtures and articles used, handled, generated or stored at the workplace which are defined as hazardous chemicals under the Work Health and Safety Regulation 2011 (WHS Regulation); and
- the generation of hazardous chemicals from work processes, for example toxic fumes released during welding.

3. SCOPE

This standard operating procedure (SOP) provides practical guidance on how to manage health and safety risks associated with hazardous chemicals for all QUU staff including contractors and other persons who use chemicals on QUU-controlled worksites.

4. DEFINITIONS AND ACRONYMS

ADG Code: the Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th Edition, approved by the Australian Transport Council.

Biological monitoring: the measurement and evaluation of a substance, or its metabolites, in the body tissue, fluids or exhaled air of a person exposed to that substance or blood lead level monitoring.

Bulk hazardous chemical: any quantity of a hazardous chemical that is in a container with a capacity exceeding 500L or net mass of more than 500kg.

Class of dangerous goods: the number assigned to the goods in the ADG Code indicating the hazard, or most predominant hazard, exhibited by the goods.

Container: anything in or by which a hazardous chemical is, or has been, wholly or partly covered, enclosed or packed, including anything necessary for the container to perform its function as a container.

Dangerous Goods: anything defined under the ADG Code as dangerous goods or goods too dangerous to be transported.

EHP: acronym used for the Department of Environment and Heritage Protection.

EMO: acronym used for Environmental Management Officer.

Environment: natural environment i.e. air, surface water, groundwater, soil, flora and fauna.

Environmental Hazard: the risk of damage to the environment, for example air pollution, water pollution, noise nuisance, dust nuisance, odour nuisance, and radioactivity.

Exposure standard: represents the airborne concentration of a particular substance or mixture that must not be exceeded. The exposure standard can be of three forms:

- 8-hour time-weighted average,
- peak limitation, and
- short term exposure limit.

GHS: the 'Globally Harmonized System of Classification and Labelling of Chemicals, 3rd Revised Edition', published by the United Nations as modified under Schedule 6 of the WHS Regulation.

Hazard: a situation or thing that has the potential to harm people, property or the environment. The GHS covers physicochemical, health and environmental hazards for hazardous chemicals.

Hazardous chemical: a substance, mixture or article that satisfies the criteria for a hazard class in the GHS (including a classification referred to in Schedule 6 of the WHS Regulation), but does not include a substance, mixture or article that satisfies the criteria solely for one of the following hazard classes:

a) acute toxicity—oral—category 5;

b) acute toxicity—dermal—category 5;

c) acute toxicity—inhalation—category 5;

d) skin corrosion/irritation—category 3;

e) serious eye damage/eye irritation— category 2B;

f) aspiration hazard—category 2;

g) flammable gas—category 2;

h) acute hazard to the aquatic environment—category 1, 2 or 3;

i) chronic hazard to the aquatic environment—category 1, 2, 3 or 4;

j) hazardous to the ozone layer.

Note: The Schedule 6 tables replace some tables in the GHS.

Health hazards: 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.

HSR: is an acronym used for Health and Safety Representative.

Ignition Source: a source of energy capable of igniting flammable or combustible substances.

Incompatible: hazardous or other goods are incompatible with hazardous chemicals if the goods are determined to be incompatible or when goods are mixed, or otherwise brought into contact with the hazardous chemical, the goods are likely to interact with the hazardous chemical and increase risk because of the interaction.

Label: written, printed or graphical information elements concerning a hazardous chemical that is affixed to, printed on, or attached to the container of a hazardous chemical.

Manager: as per QUU naming conventions, the Manager who has direct responsibility for the activity being performed or the area the activity is occurring in.

Manifest: a written summary of specific types of hazardous chemicals that are used, handled or stored at a workplace.

Manifest quantity: the quantity referred to in Schedule 11 of the WHS Regulation, table 11.1, column 5 for that hazardous chemical. Note: This schedule has been replicated in Appendix A of this SOP.

MHF: major hazard facility.

Officer: as per section 9 of the Corporations Act 2001 (Cth) is a person who makes, or participates in making decisions that affect the whole, or a substantial part, of the organisation's activities. Specific to QUU, a QUU officer has been defined as Board Members; Chief Executive Officer (CEO); Executive Leadership Team Members; Operational General Managers.

Physicochemical hazards: 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.

Pipework: a pipe or assembly of pipes, pipe fittings, valves and pipe accessories used to convey a hazardous chemical.

Placard: a sign or notice displayed or intended for display in a prominent place, or next to a container or storage area for hazardous chemicals at a workplace that contains information about the hazardous chemical stored in the container or storage area.

Placard quantity: the quantity referred to in Schedule 11 of the WHS Regulation, table 11.1, column 4 for that hazardous chemical. Note: This schedule has been replicated in Appendix A of this SOP.

Safety Data Sheet (SDS): a document that provides information on the properties of hazardous chemicals and how they affect health and safety in the workplace. For example, it includes information on the identity, health and physicochemical hazards, safe handling and storage, emergency procedures and disposal considerations.

Substance: a chemical element or compound in its natural state or obtained or generated by a process:

- including any additive necessary to preserve the stability of the element or compound and any impurities deriving from the process; but
- excluding any solvent that may be separated without affecting the stability of the element or compound, or changing its composition.

Supervisor: term used for any QUU employee who acts or is appointed as a Supervisor, Coordinator or Team Leader within QUU.

Supply: includes selling or transferring ownership or responsibility for a chemical.

WHS: work health and safety.

WHSQ: Workplace Health and Safety Queensland.

Worker: employees, contractors, subcontractors, outworkers, apprentices and trainees, work experience students, volunteers and PCBUs who are individuals if they perform work for the business.

5. ROLES AND RESPONSIBILITIES

Outlined below are responsibilities specific to operational hazardous chemicals management requirements at all QUU-controlled worksites.

5.1 QUU EXECUTIVE

QUU Executive and Senior Management (CEO, ELT, General Managers – Officer and Non-Officer Appointed) are responsible for overseeing and ensuring the implementation of the requirements of this SOP and related procedures within their respective functional areas. This includes ensuring all management practices to ensure risks associated with hazardous chemicals are regularly monitored and reviewed and appropriate resources to support the management of hazardous chemicals are installed at all QUU-controlled worksites.

5.2 MANAGER

Managers in all operational areas and QUU worksites shall ensure that hazardous chemical risks are minimised through the following controls:

- Review and manage risks associated with hazardous chemicals including monitoring and approving risk assessments associated with the procurement, handling, storage and disposal of hazardous chemicals.
- Implement adequate controls to minimise the risk to workers of exposure to hazardous chemicals on site and ensure biological monitoring is done if the risk assessment shows it is needed.
- Ensure that workers who procure, store, handle or dispose hazardous chemicals are provided with the appropriate training, instruction and supervision (this includes environmental due diligence training).
- Where quantities of hazardous chemicals exceed manifest quantities, develop a manifest and notify the regulator, Workplace Health and Safety Queensland (WHSQ), in accordance with Schedule 12, WHS Regulation.
- Ensure appropriate documentation, such as the **ChemAlert** database, register, manifest and chemical risk assessments, is maintained and current.
- Monitor work practices to ensure effective implementation of the requirements of this SOP and related procedures.
- Develop emergency plans for dealing with hazards likely to arise from significant hazardous chemical incidents.
- Provide personal protective equipment to relevant workers, ensure it is used if it is not practical to prevent or reduce exposure to hazardous chemicals by other ways and ensure workers are properly instructed in its use.
- Ensure that equipment used with hazardous chemicals is maintained and serviced in accordance with relevant legislation, standards and manufacturer's instructions, and that service records are maintained for five years.

5.3 SUPERVISOR

Supervisors and Team Leaders in all operational areas and QUU worksites are responsible for ensuring that the following is undertaken to minimise hazardous chemical risks including:

- Obtaining and making available to all workers, SDS for any hazardous chemicals brought on site.
- Maintaining a register, including SDS, of all hazardous chemicals kept on site.
- Ensuring that all containers and pipework housing hazardous chemicals are appropriately labelled with relevant safety information.
- Checking that any storage facilities are adequate and that emergency plans are effective for dealing with hazards likely to arise from significant hazardous chemical incidents.
- Consulting with workers on the introduction of new hazardous chemicals to the site, identification of risks and decisions about the control measures to be implemented to manage risks associated with hazardous chemicals.
- Ensuring all hazardous chemicals are disposed in accordance with relevant environmental regulations and, where necessary, in consultation with the relevant waste management authority.

5.4 WORKER

All workers shall ensure that they:

- Store, label and use chemicals in a manner that does not endanger themselves, others or the environment.
- Actively participate in consultation and training programs for the storage and handling of chemicals.

- Follow the safety instructions published on Safety Data Sheets (SDS) for the storage and handling of hazardous chemicals.
- Actively participate in undertaking risk assessments and identifying control measures prior to using hazardous chemicals.
- Report new hazards or incidents relating to hazardous chemicals to their Supervisor.
- Use personal protective equipment when it is not practical to prevent or reduce exposure to hazardous chemicals by other ways.
- Dispose of hazardous chemicals in accordance with relevant environmental regulations.

5.5 CONTRACTORS

At all times when performing work on a QUU site or for/on behalf of QUU, contractors must meet and comply with QUU's hazardous chemicals management requirements detailed in this and related procedures. This includes:

- Providing adequate resources to ensure implementation of the requirements of this SOP in a timely and effective manner in all areas where work is undertaken.
- Complying with this SOP and all relevant legislation, codes of practice, standards and licensing requirements that apply to their respective scope of work.

5.6 QUU SAFETY TEAM

QUU Safety Team will work with the business to ensure:

- Hazardous Chemical Manifests and Registers are developed and maintained for all relevant areas in accordance with legislative requirements.
- The establishment, review and continual improvement of hazardous chemical management systems, arrangements and related procedures.
- Provide advice to assist in the active management and resolution of identified hazardous chemical safety hazards and risks is managed in accordance with QUU SMS and relevant legislative requirements.

5.7 QUU ENVIRONMENT TEAM

QUU Environment Team will work with the business to:

- Provide advice to assist in the active management and resolution of identified environmental hazards and associated risks in accordance with Queensland legislative requirements.
- Ensure an Environmental Management Officer (EMO) is available for any incident that may require assessment and notification to the environmental regulator as per Queensland legislative requirements.

6. RELATED DOCUMENTS

- Hazardous Chemicals Quick Guide (REF204)
- Hazardous Chemical Manifest
- Hazardous Chemical Register (FOR258)
- Hazardous Chemical Risk Assessment Form (FOR288)
- ChemAlert Database
- Environmental Harm Notification Form (FOR395)
- First Aid SOP (PRO384)
- Fire Management SOP (PRO376)
- Safety Risk Assessment Guide (PRO125)

7. PROCEDURE

Many chemicals may present hazards at work. Hazardous chemicals have the potential to adversely affect the health and safety of users (both short-term and long-term) and cause property and/or environmental damage. But if the hazards are known and understood, appropriate precautions can be taken so that they can be used safely. Control measures are required to be implemented and maintained in order to reduce the risks associated with the storage and use of hazardous chemicals. This procedure provides practical guidance on how QUU will manage health, safety and environment risks associated with the procurement, handling, storage and disposal of hazardous chemicals.

This procedure does not apply to the transportation of dangerous goods, which is subject to State and Territory laws based on the requirements under the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code). Most substances and mixtures that are dangerous goods under the ADG Code are also hazardous chemicals. Any person conducting a business of undertaking has a responsibility under WHS legislation to manage the risks from all hazardous chemicals, including those that are dangerous goods.

7.1 QUEENSLAND LEGISLATIVE REQUIREMENTS

The Queensland Work Health & Safety Act 2011 and WHS Regulations impose safety obligations on all persons involved with the storage or handling of hazardous chemicals or with storage or handling systems at any place, which may affect the safety of persons or may harm property or the environment. Further information and practical guidance can be found within the following Queensland Codes of Practice:

- Hazardous Chemicals Code of Practice 2003;
- Labelling of Workplace Hazardous Chemicals Code of Practice 2011;
- Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice 2011; and
- How to Manage Work Health and Safety Risks Code of Practice 2011.

Section 319 of the Environmental Protection Act 1994 imposes a General Environmental Duty upon any person/s conducting an "activity that causes, or is likely to cause, environmental harm". The activity is not to be carried out unless the person/s takes all reasonable and practicable measures to prevent or minimise the risk of environmental harm.

Under the General Environmental Duty, notification must be made to the regulator (EHP) about incidents causing or threatening serious or material environmental harm in accordance with the Duty to Notify contained in Section 320-320G of the Environmental Protection Act 1994.

7.2 PROCUREMENT

Prior to the purchase of any hazardous chemical, the supervisor in conjunction with workers shall assess the hazards related to the use and storage of such substances, and ensure it has been approved on the Chem Alert database. Where a variety of substances which caters for a particular application may be available for purchase, selection should be based upon the product which minimises hazards associated with its use.

If the procurement is for bulk quantities of hazardous chemicals, an assessment for placarding or manifest requirements must be conducted. The assessment shall include:

- The manifest quantities in accordance with Schedule 11, WHS Regulation;
- Types, location and form of placards and/or labelling of packages and portable containers;
- Separation distances and compatibility other stored goods;
- Operation of storage or handling systems including transfer of hazardous chemicals, ignition sources, protection from impact and security;
- Information, instruction, training and supervision for workers and other persons on site;
- Provision of appropriate personal protective equipment, where required;
- Containment of spills or leaks; and
- Emergency plans and procedures.

Upon procurement of any new hazardous chemical, the SDS shall be obtained from the manufacturer or supplier and reviewed by **ChemAlert**.

7.3 HAZARDOUS CHEMICAL REGISTER

Each work site is required to establish and maintain a **Hazardous Chemical Register (FOR258)** for all hazardous chemicals handled or stored on site, unless the hazardous chemical is a consumer product and it is reasonably foreseeable that the hazardous chemical will be used at the workplace only in quantities and in a way that is consistent with household use.

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 (e.g. contractors, cleaners). The hazardous chemical register acts as an information tool for consultation regarding the management of hazardous chemicals at the workplace.

The register is 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 Chemical Register is to be established using the **Hazardous Chemical Register (FOR258)**. The exception to this is if the site has implemented the **ChemAlert** software based chemical inventory system.

A printed copy of the register is to be maintained at the site office to ensure that a copy is made available to Emergency Services if required in the event of an emergency. The location of the register is to be communicated to all staff and any other persons who use or could be potentially exposed to these substances.

Safety Data Sheets

A Safety Data Sheet (SDS) is a document that provides information on the properties of a chemical (refer to Appendix B for further information). If a chemical's hazards and consequences of exposure are known and understood, then appropriate measures can be taken so they can be stored, handled and used safely. Manufacturers and importers are responsible for determining whether a product they supply to a workplace is hazardous. If the substance is hazardous, a SDS must be prepared by the manufacturer or importer and supplied to purchasers of the substance upon request.

The minimum information that an SDS must contain is:

- Product name, product identifier and chemical identity including composition and information on ingredients;
- Australian manufacturer or importing supplier details (name, address, telephone) including an Australian emergency telephone contact number;
- Hazard(s) identification;
- Physical and chemical properties including stability and reactivity;
- Toxicological and ecological information;
- First aid measures and emergency information including fire fighting and accidental release measures;
- Precautions for safe use, storage, transportation and disposal;
- Exposure controls and personal protection; and
- Regulatory and any other relevant information.

All SDS's will be sourced from the **ChemAlert** database and/or the manufacturer/ supplier. All SDS's must contain the following elements:

- be written in English;
- contain measurements in Australian legal units (e.g. mL, L, cm3);
- state the date it was last reviewed, or if it has not been reviewed, the date it was prepared; and

- state the name, Australian address and business telephone number of the manufacturer or the importer.

7.4 HAZARDOUS CHEMICAL MANIFEST

A manifest 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.

Where quantities of hazardous chemicals exceed the 'Manifest Quantity' outlined in manifest quantities of hazardous chemicals, as specified in the WHS Regulations (Schedule 11), the work site must:

- prepare a manifest of hazardous chemicals; and
- amend the manifest as soon as practicable, if:
    - the type or quantity of hazardous chemical that must be listed in the manifest changes; or
    - there is a significant change in the information required to be recorded in the manifest.

A manifest of Schedule 11 hazardous chemicals must comply with Schedule 12 of the Regulations including the following information:

- General information such as the name of the occupier, address of the premises and the date the manifest was prepared or last revised;
- Emergency contact details for at least two people to be contacted in the event of an incident;
- Details about the hazardous chemicals used, handled and stored at the premises and the storage facilities used to store the hazardous chemicals; and
- A plan of the premises including:
    - description of the location of containers and other storage of hazardous chemicals, the location;
    - location of the manifest and entry and exits from the site;
    - location of all essential services, including fire services, isolation points and drains on the site;
    - description of the nature and occupancy of adjoining sites or premises; and
    - direction of true north.

The manifest must be kept in a place determined in agreement with the primary emergency service organisation and be readily accessible to the emergency services organisation.

Emergency Plans

Emergency plans must be developed for each Major Hazard Facility (MHF). The emergency plan must cover the full range of activities at the facility which includes non routine activities such as maintenance or construction that could result in an emergency situation. The plan must contain hazards and risks specific to each facility and be realistic and sufficiently clear to be understood by all workers and contractors. The level of detail contained in each emergency plan will be dependent on the risk profile. Emergency plans for MHF must link to the QUU Emergency Management Plan CER7.

7.5 LABELLING AND PLACARDING

All hazardous chemicals are to be correctly labelled including any chemicals that are manufactured at the workplace or transferred or decanted from the chemical's original container at the workplace (refer to Appendix C). Containers that are labelled for holding a hazardous chemical shall be used only for the use, handling or storage of the hazardous chemical. All substances shall be retained in the original packaging where practicable. Hazardous chemicals in pipework shall be identified by a label, sign or another way on or near the pipework.

A hazardous chemical is correctly labelled if the chemical is packed in a container that is written in English and includes the following:

- the product identifier (the name or number used to identify a product on a label or in a SDS);
- the name, Australian address and business telephone number of either the manufacturer or importer;
- the identity and proportion disclosed 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 are 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.

Container labels must be in a good condition and easy to read. If a hazardous chemical container is not correctly or the label has been damaged, a product identifier should be immediately attached to the container. Incorrectly labelled hazardous chemical containers should be stored in isolation until a new label should be attached to the container listing all of the required above information (labels can be printed off the Chem Alert database).

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. Steps should be taken 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.

Labels for hazardous wastes should include as much hazard information as reasonably practicable based on what is known about the identity and any suspected hazards. The label of any hazardous wastes should also include, where possible, the following information:

- the identity of any known or likely hazardous constituents or impurities and their proportions (for example, 'contains chromium VI, 5%', or 'may contain trace levels of organic peroxides');
- relevant precautionary statements;
- relevant first aid and safety directions; and
- any other information that may assist identification of the hazardous waste and its associated hazards.

If the quantities of chemicals stored at a site are below the threshold limits defined in Appendix A, the workplace is considered to be a minor storage location and is not required to have any placarding. A workplace that stores quantities that exceed the thresholds is considered to be a hazardous storage location and will require specific placarding.

Where placard quantity hazardous chemicals are used, handled or stored at a workplace, an outer warning placard, displaying the word 'HAZCHEM', must be located at each entrance where an emergency service authority may enter the workplace. Where a placard quantity hazardous chemical is stored in a container or outside storage area, a placard must be displayed next to the container or outside storage area.

If a placard quantity of a hazardous chemical is contained within a building, the placard must be located a close as is reasonably practicable to the main entrance of the building and located at the entrance to each room or walled section of the building in which the hazardous chemical is used, handled or stored.

The placards must be clearly legible to persons approaching the placard and separate from any other signs or writing that contradicts, qualifies or distracts attention from the placard.

7.6 RISK ASSESSMENTS

By their very nature, some chemicals can pose significant risks to the health and safety of those exposed to them. In the workplace, workers need to be able to control any exposure to these chemicals to

eliminate or minimise the risk of injury or illness. The following issues should be considered when chemicals are used in the workplace:

- how chemicals should be used;
- how persons are exposed to chemicals;
- whether the risk from the chemical is significant; and
- how exposure to chemicals in the workplace should be controlled.

Although risk assessments are not required by regulation, the risks associated with using, handling, storing and disposing of hazardous chemicals at the workplace must be managed by examining ways in which a hazardous chemical is used at work and the health risks involved. The purpose of the assessment is to enable decisions to be made about appropriate control measures, training, monitoring of airborne contaminants and health monitoring. These decisions will depend on the risk that arises from the use of a hazardous chemical under particular working conditions.

In order to manage risk associated with hazardous chemicals, Managers must:

- identify reasonably foreseeable hazards that could give rise to the risk;
- eliminate the risk so far as is reasonably practicable;
- 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;
- maintain the implemented control measures so that they remain effective; and
- 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.

Where required, a formal chemical risk assessment shall be completed using the **ChemAlert** database. Additionally, **Hazardous Chemical Risk Assessment Form (FOR288)** may also be completed in lieu of the **ChemAlert** database.

The following list provides an outline of when risk assessments related to chemical use should be undertaken (refer to Appendix G and H including the ***QUU Safety Risk Assessment Guide – PRO125***):

- When there is something new about the task, for example:
    - when a job is first performed;
    - before using a new location;
    - when a new piece of equipment is installed or used; and
    - when changes are made to a system of work;
- When new or relevant information regarding health and safety becomes available, for example:
    - a new or modified SDS, a new policy or procedure;
    - when there has been an injury to a person undertaking a job or to a person near where the job is being performed;
    - following an incident that did not result in an injury (near miss);
    - when there is evidence to suggest that the current risk assessment is no longer valid; and
    - as part of the construction and design of a new facility.

The risk assessment shall reference the SDS and shall be conducted by the supervisor, or nominated person, with input from employees. The person conducting the assessment shall have suitable understanding of the tasks and potential controls. Control options need to be developed, evaluated and implemented to treat the risk. The effectiveness of risk control measures often comes down to the commitment of individuals to follow the risk management process. Therefore it is essential that these people have ownership of the process and can see the benefits to themselves and the organisation of effectively managing risk.

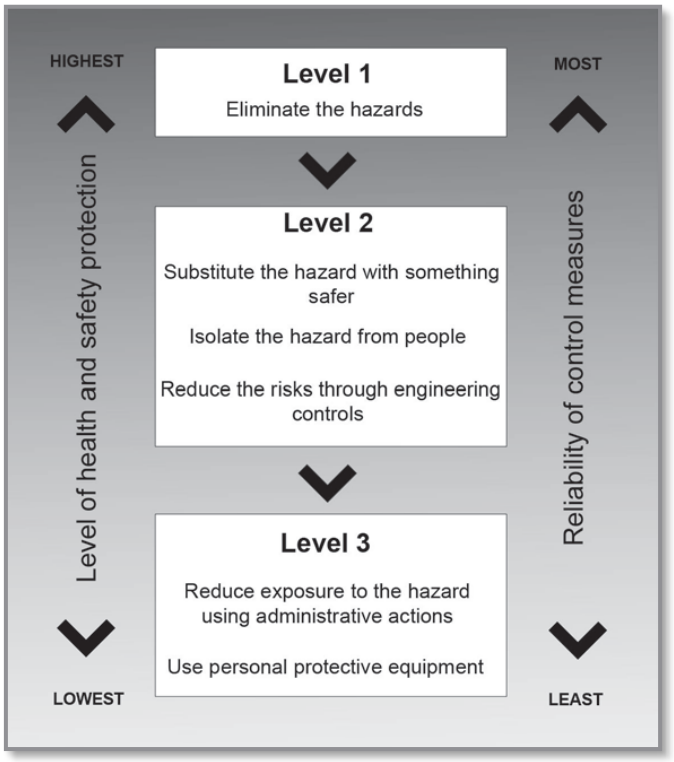
When managing the risks, regard must be had to the following factors:

- 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; or
    - could interact with the hazardous chemical at the workplace.

The **Hazardous Chemical Risk Assessment Form (FOR288)** must be kept in a location (hard or soft copy) where users of the chemical can readily access the information and be reviewed by workers, prior to the workers handling a hazardous chemical.

Hierarchy of Controls

To properly manage exposure to risks, a person should consider addressing the control measures in order shown in the figure below.



This is known as the Hierarchy of Control. In order to manage hazards and the level of risk, we should be attempting at all times to be at the highest level of the hierarchy or to use a combination of controls that provide the greatest protection level.

7.7 CONSULTATION

Workers should be consulted on chemical issues which may affect their health, safety and the environment. Consultation with workers and their health and safety representatives is a critical step of managing work health and safety risks. Consulting with and involving workers in the risk management process can assist in ensuring that safety instructions and safe work practices are complied with. Moreover, consultation provides an opportunity for staff to contribute to the decision making process and increase their commitment to the safe management of chemicals.

Consultation can take place through formal processes such as the health and safety committee or through formal and informal discussions held between managers/supervisors, workers and their health and safety representatives. A primary focus of these consultative activities should be hazard identification, risk assessment and risk control. Health and safety representatives must have access to

relevant information on matters that can affect the health and safety of workers, for example, hazardous chemicals register and data from monitoring airborne contaminants.

7.8 TRAINING

Workers required handle or store hazardous chemicals shall receive adequate training relative to the level of risk encountered when handling or storing the substance. As a minimum, all QUU workers shall receive hazardous chemicals training during local area inductions and participate in refresher training every two (2) years (i.e. general awareness of the type of substances in use, relevant risk characteristics and PPE requirements).

The results of consultation and risk assessments for the use of chemicals can be used to identify specific or additional training requirements. Workers who should receive specialised training include:

- workers may be exposed to a hazardous chemical at work;
- supervisors of workers at risk from exposure to a hazardous chemical;
- workplace health and safety committee members and health and safety representative/s;
- workers responsible for the purchasing of chemicals, control equipment and personal protective equipment;
- those responsible for the designing, scheduling, organisation and layout of work involving hazardous chemicals; and
- those who have direct involvement in fire or other emergency action.

Training should include relevant information in relation to:

- Hazard identification;
- Safe handling of hazardous chemicals;
- Environmental due diligence;
- Limit of exposure;
- Health effects of exposure;
- First Aid and treatment of exposure; and
- Incident or emergency response involving particular hazardous chemicals.

Pertinent information should be provided to all relevant workers regarding any equipment used to prevent exposure to hazardous chemicals such as mechanical ventilation systems. Records of any training conducted should be documented and maintained.

7.9 STORAGE AND HANDLING

Proper chemical storage is required to minimize the hazards associated with leaks, spills, and accidental mixing of incompatible chemicals. The quantities of hazardous chemicals should be kept to a minimum, commensurate with efficient site operations, their usage and shelf life. The risk assessment process is to be utilised to identify specific storage requirements.

Adequate storage facilities shall be provided for all chemicals. Hazardous chemicals shall be stored in a manner to ensure segregation of incompatible substances. When handling and storing chemicals, the following precautions should be observed:

- ensure chemical containers are appropriate for the type and quantity of chemical stored;
- storage of chemicals, including wastes, are based on the properties and mutual reactivity's of the chemicals;
- shelves on which the hazardous chemicals are stored shall be made from a impervious material that will not react with the substances being stored;
- incompatible chemicals shall be kept segregated from one another;
- containers are kept closed when not in use;
- liquids shall not be stored above powders and solids;

- packages are inspected regularly to ensure their integrity;
- leaking or damaged packages are removed to a safe area for repacking or disposal immediately;
- chemicals must not be stored with foodstuffs or personal use products;
- chemicals shall be stored away from heating and ignition sources; and
- appropriate spill containment shall be provided to contain any spills within the premises.

Minor quantities of hazardous materials may be stored on open shelves or work benches. However, it is recommended that chemical storage cabinets or chemical storage rooms are used for the storage of designated hazardous chemicals.

Gas Cylinder Storage and Handling

The storage of gases in cylinders (i.e. major and minor storage in indoor and outdoor areas) at all QUU controlled sites must be as per the requirements of AS4332 The storage and handling of gases in cylinders and AS2030.1 Gas cylinders – general requirements.

This includes ensuring all gas cylinders are appropriately segregated, securely stored upright in well-ventilated areas away from ignition sources, combustible or waste materials and protected from excessive temperature or physical impact.

Prior to use gas cylinders much be checked to confirm values are in good working condition, within date and free from leaks (both before and after use).

First Aid and Fire Protection equipment must be provided and readily available in suitable areas as per the QUU First Aid SOP ((PRO384) and **Fire Management SOP (PRO376).**

Transfer of hazardous chemicals

Transferring hazardous chemicals generally presents a far greater risk than for static storage. All chemicals must be placed into a suitable container in instances where decanting is required. The type of container required is to be determined through a review of the SDS. If there is a risk of spillage during the decanting process, consideration is to be given to containment controls such as bunding, for larger quantities, or suitable trays for smaller quantities.

Health Monitoring and Exposure Standards

The use of certain chemical may require monitoring of the worker's environment during the use of the chemicals or surveillance of the health of the workers. Managers must ensure that no person at the workplace is exposed to a substance or mixture in an airborne concentration that exceeds the relevant exposure standard for the substance or mixture.

To comply with the WHS Regulations, monitoring of workplace contaminant levels for chemicals with exposure standards may need to be carried out. Exposure standard information is listed on the SDS and is required to be considered as part of the risk assessment.

If there is an exposure standard for a hazardous chemical supplied or generated at the workplace and:

- there is uncertainty (based on reasonable grounds) as to whether the exposure standard is or may be exceeded; or
- atmospheric monitoring is necessary to determine whether there is a risk to health;

then the Manager must ensure that atmospheric monitoring is carried out.

Health surveillance must be provided for any worker who carries out ongoing work using, handling or storing hazardous chemicals referred to in Schedule 14 of the WHS Regulation (refer to Appendix D) and there is significant risk to the worker's health because of the exposure.

The results of any atmospheric monitoring and health surveillance must be provided as soon as is reasonably practicable to any employee who has been, or who may have been exposed to the hazardous chemical that is the subject of the monitoring or surveillance.

Personal Protective Equipment

The use of personal protective equipment (PPE) should not be regarded as an alternative to engineering or other options for controlling exposure, but PPE should be utilised to supplement other controls especially where it is difficult to ensure protection with the other measures.

PPE, such as impervious gloves and goggles, shall be available for any worker who is working with a chemical that requires PPE. It will be expected that contractors who bring chemicals onto a work site managed by Urban Utilities will also provide their employees with appropriate PPE to work with the chemicals.

Spills Management

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.

In the event of a leak, spill or uncontrolled release which involves the release of a type or quantity of a chemical that poses an immediate risk to health or involves an uncontrolled fire or explosion:

- workers must notify the local fire warden;
- the fire warden assesses the situation, including where possible identifying the hazardous chemical/s involved;
- the fire warden notifies the chief fire warden and advises the nature of the incident, steps being taken and assistance required;
- where required, chief fire warden contacts the appropriate emergency services (e.g. ambulance/ fire brigade/ police);
- chief fire warden summons the emergency response team to implement emergency procedures;
- if necessary, first aiders attend to injured person/s as appropriate;
- emergency response team cordon off the danger area and move people away from the immediate danger area as quickly as possible;
- if necessary, emergency response team to evacuate surrounding area/s;
- await arrival of emergency services – do not return to the danger area until the 'all clear' is given by the emergency services.

If the leak, spill or uncontrolled release occurs outside a building, do not attempt to evacuate the workplace unless officially advised to do so by the emergency services.

In the event of a spill involving the release of a type or quantity of a chemical which does not pose an immediate risk to health and does not involve chemical contamination to the body:

- notify personnel in the immediate vicinity of the incident;
- isolate the area, close doors and evacuate the immediate area, if necessary;
- remove ignition sources and unplug nearby electrical equipment;
- vent vapours to outside of building only (open windows and turn on exhaust fans, if available);
- locate spill kit, and choose appropriate PPE (goggles, face shield, impervious gloves, apron, etc.);
- confine and contain spill, such as covering with appropriate absorbent material - acid and base spills should be neutralized prior to clean-up;
- sweep solid material into a plastic dust pan and place in a labelled, sealed container;
- wet mop spill area - be sure to decontaminate broom, dustpan, etc.;
- put all contaminated items (gloves, clothing, etc.) into a sealed container or plastic bag;
- return spill kit to storage location and arrange for used contents to be replaced; and

- inform your supervisor and the local fire warden.

An appropriate spill kit shall also be made available. The minimum contents include:

- Absorbent pads and socks;
- Spill absorbent such as vermiculite;
- Contaminated waste bags;
- Acid and alkali neutralisers such as Acid-Sorb;
- PPE such as gloves and goggles; and
- Dust pan and brush or scoop.

Reporting Spill Events

It is the responsibility of all personnel to immediately report any spill in accordance with QUU incident and hazard reporting processes.

All spills will be investigated with appropriate action taken and controls put in place to prevent recurrence.

Refer to QUU **WHS Hazard and Risk Management Procedure (PRO363)**and **WHS Incident Reporting, Investigation and Escalation Procedure (PRO364)** for guidance on the reporting of WHS events.

Environmental Incident Reporting Process

Any environmental impact or harm caused by a chemical leak, spill or uncontrolled release must be reported to the Environmental Management Team via telephone 0411 768 492 within 24 hours of becoming aware. Minor environmental damage are to be reported via the **Environmental Harm Notification Form (FOR395)**.

Environmental harm includes animal death, vegetation damage, air, noise or odour pollution or any other observable environmental impact. This includes environmental events that pose a threat to public health (e.g. nearby schools, hospitals), or to nearby sensitive environments, protected sites and habitats (e.g. conservation parks, marine parks, threatened fauna or floral species).

Chemical Disposal

All chemical users have a responsibility to dispose of unwanted or unused chemicals in a safe manner that does not adversely affect other people or the environment. Chemical waste includes solvents, acids, alkalis, toxic materials, paints, oils, pesticides, herbicides, contaminated glassware and consumables, containers and chemicals that are no longer required or have deteriorated with age.

Chemicals can be disposed through the sewage system, in landfill or collected by a licenced chemical waste contractor for disposal. Hazardous chemical waste products must be identified and correctly classified, so far as is reasonably practicable. Where it is not reasonably practicable to undertake a complete hazard classification of waste material, the hazard classification must be determined or estimated using a precautionary approach based on the known or likely constituents of the waste.

Prior to disposing of chemical waste, chemical users shall:

- read the label and SDS and any handling, safety (including recommended protective clothing) and disposal instructions;
- ask for advice from suppliers or local authorities, when needed;
- dispose of waste as soon as practicable; and
- comply with local authorities requirements for the disposal of chemicals.

For chemical waste to be acceptable for disposal to sewer, the waste must:

- be soluble in water;
- not be a solid or viscous substance in a quantity, or of a size, that can obstruct, or interfere with the operation of the sewage system;
- not be toxic or hazardous to aquatic, marine or terrestrial life and environments; and

- be between pH6 and pH9 prior to disposal.

Waste containing heavy metals, pesticides, herbicides or fungicides cannot be disposed to sewer. Acceptable flammable liquids (i.e. short chain alcohol solutions) must be diluted to ensure there is no accumulation of alcohols in the under sink traps to eliminate the potential to create a fire hazard. Concentrated solutions of acids and alkalis cannot be disposed to sewer.

For chemicals to be disposed via landfill or collection by a licenced waste contractor the waste must be sealed in its original container or a clearly labelled appropriate and compatible container. Labels for hazardous wastes should include as much hazard information as reasonably practicable based on what is known about the identity and any suspected hazards.

All empty containers must be rinsed thoroughly to remove any traces of the chemical and the chemical label must be removed or defaced (so that the chemical name cannot be identified). Rinse effluent from this process should be treated as hazardous and handled accordingly.

7.10 EMERGENCY MANAGEMENT

Regardless of controls put in place to prevent incidents occurring in your workplace, they can still occur. For example, people can be exposed to chemicals and require immediate medical treatment, a fire can start or a loss of containment can occur. As such, all workplaces should have in place a comprehensive emergency management plan that outlines procedures to manage all identified emergencies likely to occur.

The purpose of the emergency plan is to plan for, and thus minimise the effects of any dangerous occurrence or near miss at a workplace resulting from handling of hazardous chemicals. The emergency management plan should include specific information to assist in the management of a leak, spill or uncontrolled release of a hazardous chemical. Moreover, emergency procedures should be established and used to safely identify the source of a release and any necessary corrective actions or repairs to be made.

The specific issues relating to hazardous chemicals that should be addressed in the emergency management plan include the following:

- technical information such as chemical and physical characteristics and dangers of every hazardous chemical, for example review the chemical register in the administration office;
- the types of risks taken into account (e.g. fire, accidental release, poisoning, environmental exposure);
- the provision of any specialised on-site first aid or assistance that may have to be administered;
- the provision and location of specialised equipment required including fire fighting materials, safety showers, eye wash stations, chemical spill kits, neutralising agents and spill containment equipment to prevent environmental harm (e.g. sandbags, silt socks);
- the limits of on-site action prior to seeking assistance from emergency services agencies;
- locations of the hazardous chemicals, personnel and equipment and emergency control rooms at the workplace;
- evacuation arrangements that take into account possible airborne dispersal of the hazardous material e.g. wind direction; and
- emergency service agencies, any mutual resources involved and liaison arrangements between them.

The emergency management plan should be communicated to all workers and for controls to be effective, relevant workers need to be appropriately trained and ideally, directly involved in the development of emergency procedures.

When developing an emergency plan, consideration must be had to the following factors:

- 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;

- any sensitive environments within and surrounding the workplace; and
- the number of workers and other persons at the workplace.

The extent of emergency procedures required will depend on the size and complexity of the workplace, types and quantities of hazardous chemicals and the processes involved when the goods are in use. However, an emergency plan must be prepared if the quantity of hazardous chemicals used, handled or stored at a workplace exceeds the manifest quantity for that hazardous chemical. The Manager is responsible for implementing the emergency plan for the site in the event of an emergency and must give a copy of the emergency plan for the site to the primary emergency service organisation.

As a minimum, emergency procedures should include instructions on:

- emergency procedures including:
    - an effective response to an emergency;
    - evacuation procedures;
    - notifying the emergency service organisation at the earliest opportunity;
    - medical treatment and assistance;
    - environmental harm prevention procedures; and
    - effective communication between the person authorised by QUU to coordinate the emergency and all persons at the site;
- testing of the emergency procedures, including frequency of testing; and
- information, training and instruction to relevant workers in relation to implementing the emergency procedures.

When developing or reviewing the emergency plan written advice shall be sought from the primary emergency services organisation and that advice must be considered. The plan must be reviewed if there is a change in circumstances or at least every five years.

Emergency plans should be readily available in hard copy form at all times. The location of the emergency plan should be easily located by all workers and should be discussed with the emergency services organisation when it is updated or reviewed.

First Aid

If an injured person requires first aid following a hazardous chemical incident, the following procedures should be implemented:

- delegate a worker to obtain the safety data sheet (SDS)
    - follow the first aid instructions on SDS; and
    - give a hard copy of SDS to medical staff.
- for chemical splashes to the eye:
    - flood the eyes with water (use the eye wash station, if available); and
    - continue to flood with running water for 20 minutes and seek medical attention if required.
- for chemical splashes to the skin:
    - irrigate the skin with running water for 20 minutes and seek medical attention if required.

8. APPENDIX A

8.1 PLACARD AND MANIFEST QUANTITIES

The table below shows placard and manifest quantities of hazardous chemicals, as specified in the WHS Regulation (Schedule 11). The final column of this table shows the link between the GHS classes and categories and the equivalent classes and categories of dangerous goods under the ADG Code.

Note: Where the WHS Regulations (Schedule 13) require a placard, the relevant dangerous goods class label (pictogram) must be displayed on the placard, rather than the corresponding GHS pictogram.

Column 1	Column 2	Column 3	Column 4	Column 5	ADG Code Classification
Item	Description of hazardous chemical		Placard quantity	Manifest quantity	
	Hazard Class	Hazard Category			
1	Flammable gases	Category 1	200L	5000L	2.1
2	Gases under pressure	with acute toxicity, categories 1, 2, 3 or 4 Note—Category 4 only up to LC_{50} of 5000 ppmV	50L	500L	2.3
3		with skin corrosion categories 1A, 1B or 1C	50L	500L	2.3
4		aerosols	5000L	10 000L	2.1 or 2.2
5		not specified elsewhere in this Table	1000L	10 000L	2.2
6	Flammable liquids	Category 1	50L	500L	3 (PG I)
7		Category 2	250L	2500L	3 (PG II)
8		Category 3	1000L	10 000L	3 (PG III)
9		Any mix of chemicals from Items 6 – 8 where none of the items exceeds the quantities in columns 4 or 5 on their own	1000L	10 000L	
10		Category 4	10 000L	100 000L	*Note 3*
11	Self-reactive substances	Type A	5kg or 5L	50kg or 50L	GTDTBT – *Note 4*
12		Type B	50kg or 50L	500kg or 500L	4.1 (Type B)
13		Type C-F	250kg or 250L	2500kg or 2500L	4.1 (Type C-F)
14	Flammable solids	Category 1	250kg	2500kg	4.1 (PG II)
15		Category 2	1000kg	10 000kg	4.1 (PG III)
16		Any mix of chemicals from Items 12 - 15 where none of the items exceeds the quantities in columns 4 or 5 on their own	1000kg or 1000L	10 000kg or 10 000L	
17	Pyrophoric liquids and Pyrophoric solids	Category 1	50kg or 50L	500kg or 500L	4.2 (PG I)
18	Self-heating substances and mixtures	Category 1	250kg or 250L	2500kg or 2500L	4.2 (PG II)

Column 1	Column 2	Column 3	Column 4	Column 5	ADG Code Classification
Item	Description of hazardous chemical		Placard quantity	Manifest quantity	
	Hazard Class	Hazard Category			
19		Category 2	1000kg or 1000L	10 000kg or 10 000L	4.2 (PG III)
20		Any mix of chemicals from Items 17 - 19 where none of the items exceeds the quantities in columns 4 or 5 on their own	1000kg or 1000L	10 000kg or 10 000L	
21	Substances which in contact with water emit flammable gas	Category 1	50kg or 50L	500kg or 500L	4.3 (PG I)
22		Category 2	250kg or 250L	2500kg or 2500L	4.3 (PG II)
23		Category 3	1000kg or 1000L	10 000kg or 10 000L	4.3 (PG III)
24		Any mix of chemicals from Items 21 - 23 where none of the items exceeds the quantities in columns 4 or 5 on their own	1000kg or 1000L	10 000kg or 10 000L	
25	Oxidising liquids and Oxidising solids	Category 1	50kg or 50L	500kg or 500L	5.1 (PG I)
26		Category 2	250kg or 250L	2500kg or 2500L	5.1 (PG II)
27		Category 3	1000kg or 1000L	10 000kg or 10 000L	5.1 (PG III)
28		Any mix of chemicals from Items 25 - 27 where none of the items exceeds the quantities in columns 4 or 5 on their own	1000kg or 1000L	10 000kg or 10 000L	
29	Organic peroxides	Type A	5kg or 5L	50kg or 50L	GTDTBT – *Note 4*
30		Type B	50kg or 50L	500kg or 500L	5.2 (Type B)
31		Type C - F	250kg or 250L	2500kg or 2500L	5.2 (Type C-F)
32		Any mix of chemicals from Items 30 and 31 where none of the items exceeds the quantities in columns 4 or 5 on their	250kg or 250L	2500kg or 2500L	

Column 1	Column 2	Column 3	Column 4	Column 5	ADG Code Classification
Item	Description of hazardous chemical		Placard quantity	Manifest quantity	
	Hazard Class	Hazard Category			
		own			
33	Acute Toxicity	Category 1	50kg or 50L	500kg or 500L	6.1 (PG I) – *Note 5*
34		Category 2	250kg or 250L	2500kg or 2500L	6.1 (PG II)
35		Category 3	1000kg or 1000L	10 000kg or 10 000L	6.1 (PG III)
36		Any mix of chemicals from Items 33 - 35 where none of the items exceeds the quantities in columns 4 or 5 on their own	1000kg or 1000L	10 000kg or 10 000L	
37	Skin corrosion	Category 1A	50kg or 50L	500kg or 500L	8 (PG I)
38		Category 1B	250kg or 250L	2500kg or 2500L	8 (PG II)
39		Category 1C	1000kg or 1000L	10 000kg or 10 000L	8 (PG III)
40	Corrosive to metals	Category 1	1000kg or 1000L	10 000kg or 10 000L	8 (PG III)
41		Any mix of chemicals from Items 37 - 40 where none of the items exceeds the quantities in columns 4 or 5 on their own	1000kg or 1000L	10 000kg or 10 000L	
42	Unstable explosives		5kg or 5L	50kg or 50L	GTDTBT – *Note 4*
43		Any mix of chemicals from Items 11, 29 and 42 where none of the items exceeds the quantities in columns 4 or 5 on their own	5kg or 5L	50kg or 50L	

(1) For the purposes of this table, if a flammable liquid category 4 is used, handled or stored in the same spill compound as one or more flammable liquids of categories 1, 2 or 3, the total quantity of flammable liquids categories 1, 2 or 3 must be determined as if the flammable liquid category 4 had the same classification as the flammable liquid in the spill compound with the lowest flash point.

Example: For placard and manifest purposes, a spill compound containing 1000L of flammable liquid category 1 and 1000L of flammable liquid category 4 is considered to contain 2000L of flammable liquid category 1.

(2) For the item 2 in the table, Gases under pressure with acute toxicity category 4 only applies up to a LC_{50} of 5000 ppmV. This is equivalent to Division 2.3 dangerous goods under the ADG Code.

(3) Only flammable liquids with a flash point of up to 93°C are classified as hazardous chemicals under the WHS Regulations and the GHS. C1 combustible liquids with flashpoints between 93°C and 150°C are not classified as hazardous workplace chemicals.

(4) GTDTBT means goods too dangerous to be transported.

(5) Division 2.3 under the ADG Code includes gases and vapours classified as acutely toxic (categories 1, 2 and 3) and gases which are corrosive to skin (category 1).

9. APPENDIX B

9.1 SAFETY DATA SHEETS (SDS)

The SDS contains information on the identity of the product and any hazardous ingredients, potential health effects, toxicological properties, physical hazards, safe use, handling and storage, emergency procedures, and disposal requirements specific to the chemical.

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.

Important hazard information to note from the SDS includes:

Hazard classification	This information will be present on the SDS in the form of hazard statements, for example "may cause cancer" or "flammable liquid".
The route of entry	This information is important as it lets you assess the health risks to your workers. Routes of entry can include inhalation, skin contact, ingestion, eye contact and injection through high pressure equipment. Depending on the substance, the severity of the harm could range from minor to major, for example, from minor skin irritation to chronic respiratory disease. Some chemicals may not be hazardous by all routes of entry. For example, silica is hazardous only by inhalation so the risk assessment needs to consider how inhalation could occur in the workplace.
Advice or warnings for at-risk workers	The SDS may also include summaries of toxicological data, or advice or warnings for people that might be at risk, such as: • people who are sensitised to particular chemicals • warnings for pregnant women • people with existing medical conditions such as asthma.
Instructions on storage	This may include advice on not to store with certain incompatible materials, or advice on potential hazardous degradation products. Examples include – storage of acids and bases, or storage instructions to avoid formation of explosive peroxides in ether during extended storage

Physicochemical properties	Physicochemical properties can have a significant effect on the hazard. Some key properties to note include:
	• physical state: is it solid, liquid or gas?
	  ○ if solid – what is the potential for dust explosion?
	  ○ if liquid – is it mobile/viscous/volatile/miscible?
	  ○ if gas (and vapours) – is it lighter/heavier than air?
	• flashpoint, fire point and explosive limits
	• viscosity
	• density
	• particle size
	• vapour pressure
	• solubility and pH
	• reactivity
	• boiling and/or freezing point or range
	• electrical and/or heat conductivity
	• the nature and concentration of combustion products.

Use situations that may generate hazardous chemicals	Examples may include: • use of welding rods which may liberate hazardous fumes and vapours • directions for use of chlorine bleach, warning that harmful levels of chlorine gas may be generated if the substance is mixed with incompatible chemicals • warnings that some metals, including alkali metals, in contact with

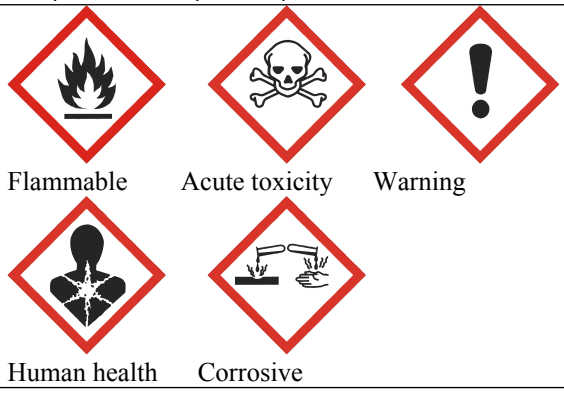
	water or acids, liberate flammable gas • information on by-products or breakdown products like formation of explosive peroxides in ether.
Environmental hazards	The SDS should contain information on environmental hazards and risks. An awareness of this information will assist you to meet any environmental laws in your state or territory.

10. APPENDIX C

10.1 LABELLING

The table below shows examples of elements on a label that indicates the type of hazard and the severity of the hazard.

Examples of hazard information on a label

LABEL ELEMENT	EXAMPLES
Signal words – these provide an immediate warning to the reader	Danger or Warning
Hazard statements – these describe the nature and severity of the chemical hazard based on a chemical's classification	May cause cancer Fatal if inhaled Flammable liquid and vapour Causes severe skin burns and eye damage May cause respiratory irritation
Pictograms – these provide a pictorial representation of the type of hazard that can be easily recognised at a glance	 Flammable Acute toxicity Warning Human health Corrosive

The following additional information should also be included on the label, where available:

- an emergency phone number, for specific poisons or treatment advice;
- the overseas name, address and telephone number of the manufacturer or supplier;
- a valid website or internet address; and
- reference to the safety data sheet, for example a statement on the label that says: "Additional information is listed in the safety data sheet".

The size of a label should be large enough to contain all of the relevant hazard and other information in a size and style that is easily visible and legible in the workplace and appropriate to the size of the container, with larger labels present on larger containers. Where a hazardous chemical is packaged in a container that is too small to attach a label with information that is required of hazardous chemical labels in general, then the label must be written in English and include the following:

- the product identifier;
- the name, Australian address and business telephone number of either the manufacturer or importer;
- a hazard pictogram or hazard statement that is consistent with the correct classification of the chemical; and

- any other information required for hazardous chemicals labels in general that is reasonably practicable to include.

Examples of labels that have been produced in accordance with the legislative requirements are shown below.

Example label containing the full set of workplace labelling information:

Read label before use. Keep out of reach of children

Flammosol

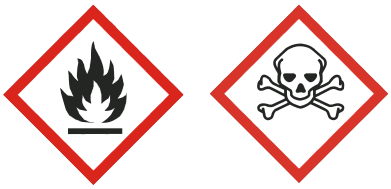
FLAMMABLE LIQUID, TOXIC N.O.S.

(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.

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.

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

Wear protective gloves and eye and face protection.

Wash hands thoroughly after handling.

Dispose of contents/container in accordance with Jurisdictional regulations.

Do not eat, drink or smoke when using this product.

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

Example labels which are appropriate for small containers:

a) This example contains the minimum labelling information permitted and a reference to the safety data sheet.

Flammosol

Refer to the Safety Data Sheet before use.

Madeup Chemical Company, 999 Chemical Street,
Chemical Town, My State.
Telephone: 1300 000 000

b) This label has sufficient room to include additional labelling information such as hazard statements, the identity and proportions of the hazardous ingredients, critical first aid instructions and reference to the safety data sheet have been included.

Flammosol

Contains:
Hydrocarbon solvent 95%
Toxicole 5%

Highly flammable liquid and vapour
Toxic if swallowed
Causes skin irritation

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

Additional information is listed in the Safety Data Sheet

Madeup Chemical Company, 999 Chemical Street, Chemical Town, My State. Telephone: 1300 000 000

11. APPENDIX D

11.1 REQUIREMENTS FOR HEALTH MONITORING

The table below shows the requirements for health monitoring, as specified in the WHS Regulations (Schedule 14).

COLUMN 1 ITEM	COLUMN 2 HAZARDOUS CHEMICAL	COLUMN 3 TYPE OF HEALTH MONITORING
1	Acrylonitrile	Demographic, medical and occupational history Records of personal exposure Physical examination
2	Arsenic (inorganic)	Demographic, medical and occupational history Records of personal exposure Physical examination with emphasis on the peripheral nervous system and skin Urinary inorganic arsenic
3	Benzene	Demographic, medical and occupational history Records of personal exposure Physical examination Baseline blood sample for haematological profile
4	Cadmium	Demographic, medical and occupational history Records of personal exposure Physical examination with emphasis on the respiratory system Standard respiratory questionnaire to be completed Standardised respiratory function tests including for example, FEV_1, FVC and FEV_1/FVC Urinary cadmium and β_2-microglobulin Health advice, including counselling on the effect of smoking on cadmium exposure
5	Chromium (inorganic)	Demographic, medical and occupational history Physical examination with emphasis on the respiratory system and skin Weekly skin inspection of hands and forearms by a competent person
6	Creosote	Demographic, medical and occupational history Health advice, including recognition of photosensitivity and skin changes Physical examination with emphasis on the neurological system and skin, noting any abnormal lesions and evidence of skin sensitisation Records of personal exposure, including photosensitivity
7	Crystalline silica	Demographic, medical and occupational history Records of personal exposure Standardised respiratory questionnaire to be completed Standardised respiratory function test, for example, FEV_1, FVC and FEV_1/FVC Chest X-ray full size PA view

8	Isocyanates	Demographic, medical and occupational history Completion of a standardised respiratory questionnaire Physical examination of the respiratory system and skin Standardised respiratory function tests, for example, FEV_1, FVC and FEV_1/FVC
9	Mercury (inorganic)	Demographic, medical and occupational history Physical examination with emphasis on dermatological, gastrointestinal, neurological and renal systems Urinary inorganic mercury
10	4,4'-Methylene bis (2-chloroaniline) (MOCA)	Demographic, medical and occupational history Physical examination Urinary total MOCA Dipstick analysis of urine for haematuria Urine cytology
11	Organophosphate pesticides	Demographic, medical and occupational history including pattern of use Physical examination Baseline estimation of red cell and plasma cholinesterase activity levels by the Ellman or equivalent method Estimation of red cell and plasma cholinesterase activity towards the end of the working day on which organophosphate pesticides have been used
12	Pentachlorophenol (PCP)	Demographic, medical and occupational history Records of personal exposure Physical examination with emphasis on the skin, noting any abnormal lesions or effects of irritancy Urinary total pentachlorophenol Dipstick urinalysis for haematuria and proteinuria
13	Polycyclic aromatic hydrocarbons (PAH)	Demographic, medical and occupational history Physical examination Records of personal exposure, including photosensitivity Health advice, including recognition of photosensitivity and skin changes
14	Thallium	Demographic, medical and occupational history Physical examination Urinary thallium
15	Vinyl chloride	Demographic, medical and occupational history Physical examination Records of personal exposure

12. APPENDIX E

12.1 PROHIBITED CARCINOGENS, RESTRICTED CARCINOGENS AND RESTRICTED HAZARDOUS CHEMICALS

The table below shows prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals, as specified in the WHS Regulations (Schedule 10) and Regulations 340 and 380–384.

The prohibition of the use of carcinogens listed in table C.1, column 2 and the restriction of the use of carcinogens listed in table C.2, column 2 apply to the pure substance and where the substance is present in a mixture at a concentration greater than 0.1%, unless otherwise specified.

Table C.1 Prohibited carcinogens

Column 1 Item	Column 2 Prohibited carcinogen [CAS number]
1	2-Acetylaminofluorene [53-96-3]
2	Aflatoxins
3	4-Aminodiphenyl [92-67-1]
4	Benzidine [92-87-5] and its salts (including benzidine dihydrochloride [531-85-1])
5	bis(Chloromethyl) ether [542-88-1]
6	Chloromethyl methyl ether [107-30-2] (technical grade which contains bis(chloromethyl) ether)
7	4-Dimethylaminoazobenzene [60-11-7] (Dimethyl Yellow)
8	2-Naphthylamine [91-59-8] and its salts
9	4-Nitrodiphenyl [92-93-3]

Table C.2 Restricted carcinogens

Column 1 Item	Column 2 Restricted carcinogen [CAS Number]	Column 3 Restricted use
1	Acrylonitrile [107-13-1]	All
2	Benzene [71-43-2]	All uses involving benzene as a feedstock containing more than 50% of benzene by volume Genuine research or analysis
3	Cyclophosphamide [50-18-0]	When used in preparation for therapeutic use in hospitals and oncological treatment facilities, and in manufacturing operations Genuine research or analysis
4	3,3'-Dichlorobenzidine [91-94-1] and its salts (including 3,3'-Dichlorobenzidine dihydrochloride [612-83-9])	All
5	Diethyl sulfate [64-67-5]	All
6	Dimethyl sulfate [77-78-1]	All
7	Ethylene dibromide [106-93-4]	When used as a fumigant Genuine research or analysis
8	4,4'-Methylene bis(2-chloroaniline) [101-14-4] MOCA	All
9	3-Propiolactone [57-57-8] (Beta-propiolactone)	All
10	o-Toluidine [95-53-4] and o-Toluidine hydrochloride [636-21-5]	All
11	Vinyl chloride monomer [75-01-4]	All

Table C.3 Restricted hazardous chemicals

Column 1 Item	Column 2 Restricted hazardous chemical	Column 3 Restricted use
1	Antimony and its compounds	For abrasive blasting at a concentration of greater than 0·1% as antimony
2	Arsenic and its compounds	For abrasive blasting at a concentration of greater than 0·1% as arsenic For spray painting
3	Benzene (benzol), if the substance contains more than 1% by volume	For spray painting
4	Beryllium and its compounds	For abrasive blasting at a concentration of greater than 0·1% as beryllium
5	Cadmium and its compounds	For abrasive blasting at a concentration of greater than 0·1% as cadmium
6	Carbon disulphide (carbon bisulphide)	For spray painting
7	Chromate	For wet abrasive blasting
8	Chromium and its compounds	For abrasive blasting at a concentration of greater than 0·5% (except as specified for wet blasting) as chromium
9	Cobalt and its compounds	For abrasive blasting at a concentration of greater than 0·1% as cobalt
10	Free silica (crystalline silicon dioxide)	For abrasive blasting at a concentration of greater than 0·1% For spray painting
11	Lead and compounds	For abrasive blasting at a concentration of greater than 0·1% as lead or which would expose the operator to levels in excess of those set in the regulations covering lead
12	Lead carbonate	For spray painting
13	Methanol (methyl alcohol), if the substance contains more than 1% by volume	For spray painting
14	Nickel and its compounds	For abrasive blasting at a concentration of greater than 0·1% as nickel
15	Nitrates	For wet abrasive blasting
16	Nitrites	For wet abrasive blasting
17	Radioactive substance of any kind where the level of radiation exceeds 1 Bq/g	For abrasive blasting, so far as is reasonably practicable
18	Tetrachloroethane	For spray painting
19	Tetrachloromethane (carbon tetrachloride)	For spray painting
20	Tin and its compounds	For abrasive blasting at a concentration of greater than 0·1% as tin
21	Tributyl tin	For spray painting

Note: Regulation 382 deals with polychlorinated biphenyls (PCBs).

13. APPENDIX F

13.1 COMPARISON OF HAZARD CLASSES AND CATEGORIES UNDER THE ADG CODE AND THE GHS

ADG class/category, packing group	Equivalent GHS class and category as classified under the WHS Regulations
Class 1 Explosives Unstable explosives (Goods too dangerous to be transported) Division 1.1 Division 1.2 Division 1.3 Division 1.4 Division 1.5 Division 1.6	Unstable explosives Division 1.1 Division 1.2 Division 1.3 Division 1.4 Division 1.5 Division 1.6
Class 2 Gases	Gases under pressure NOTE: The GHS has 4 categories which correspond to the transport condition under the ADG Code. They are: • Gas under pressure – Compressed gas • Gas under pressure – Liquefied gas • Gas under pressure – Refrigerated liquefied gas • Gas under pressure – Dissolved gas
Division 2.1	Flammable gases category 1 Flammable aerosols category 1 and 2
Division 2.2	Oxidising gases category 1 Gases under pressure not otherwise specified
Division 2.3	Acute toxicity: Inhalation categories 1-4 (Note: category 4 only up to LC_{50} of 5000 ppmV) Skin corrosion / irritation categories 1A-C
Class 3 PG I	Flammable liquids category 1
Class 3 PG II	Flammable liquids category 2
Class 3 PG III	Flammable liquids category 3
Division 4.1 Self Reactive substances types A-G [1]	Self-reactive substances type A-F Type G are not classified under WHS Regulations as hazardous chemicals.
Division 4.1 PG II	Flammable solids category 1
Division 4.1 PG III	Flammable solids category 2
Division 4.2 PG 1	Pyrophoric liquids category 1 Pyrophoric solids category 1
Division 4.2 PG II	Self-heating substances category 1
Division 4.2 PG III	Self-heating substances category 2
Division 4.3 PG I	Substances and mixtures which in contact with water emit flammable gases, category 1
Division 4.3 PG II	Substances and mixtures which in contact with water emit flammable gases, category 2

Division 4.3 PG III	Substances and mixtures which in contact with water emit flammable gases, category 3
Division 5.1 PG I	Oxidising solids, oxidising liquids, category 1
Division 5.1 PG II	Oxidising solids, oxidising liquids, category 2
Division 5.1 PG III	Oxidising solids, oxidising liquids, category 3
Division 5.2 Organic Peroxides types A-G [1]	Organic peroxides type A-F. Type G are not classified under WHS Regulations as hazardous chemicals.
Division 6.1 PG I	Acute toxicity: Oral category 1 Acute toxicity: Dermal category 1 Acute toxicity: Inhalation category 1 (dusts, mists, vapours)
Division 6.1 PG II	Acute toxicity: Oral category 2 Acute toxicity: Dermal category 2 Acute toxicity: Inhalation category 2 (dusts, mists, vapours)
Division 6.1 PG III	Acute toxicity: Oral category 3 Acute toxicity: Dermal category 3 Acute toxicity: Inhalation category 3 (dusts, mists, vapours)
Division 6.2	No equivalent GHS class and not classified under WHS Regulations as hazardous chemicals.
Division 7	No equivalent GHS class and not classified under WHS Regulations as hazardous chemicals.
Class 8 PG I	Skin corrosion category 1A
Class 8 PG II	Skin corrosion category 1B
Class 8 PG III	Skin corrosion category 1C Corrosive to metals category 1
Class 9 [2]	Class 9 dangerous goods are not classified under the WHS Regulations.
Goods too dangerous to be transported	Self-reactive substances type A [1] Organic peroxides type A [1] Unstable explosives
C1 combustible liquids (flash point 60-150°C)	Flammable liquids category 4 (flash point 60-93°C)

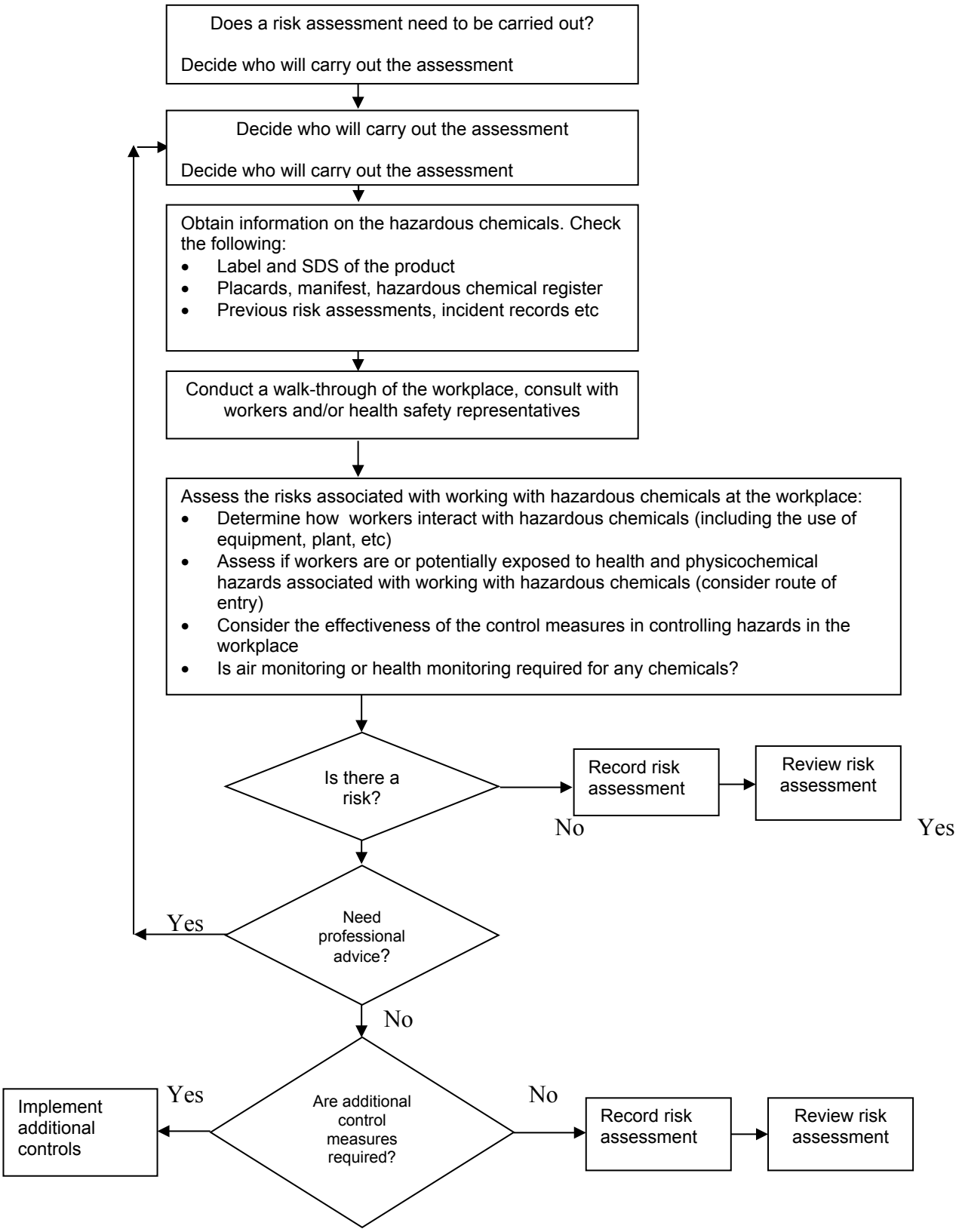
[1] Depending on packing method, self-reactive substances and organic peroxides type A will either be classified under the ADG Code as 'Goods too dangerous to be transported' or their comparative Divisions (4.1 or 5.2).

[2] Class 9 dangerous goods include ecotoxicological hazard classes and categories, and are not mandatory under WHS Regulations. They may be used to supplement the GHS classification of a substance or a mixture or to comply with other environmental legislation.

14. APPENDIX G

14.1 OVERVIEW OF A RISK ASSESSMENT PROCESS

An overview of the process for the assessment of health risks arising from the use of hazardous chemicals in the workplace is provided below.



15. APPENDIX H

15.1 RISK ASSESSMENT PROCESS

Refer to the ***QUU Safety Risk Assessment Guide (PRO125)*** for guidance on completing a WHS risk assessment and to ensure a consistent method of assessing risks in QUU.

PROCESS STEPS - HAZARDOUS CHEMICALS RISK ASSESSMENT

The following instructions are provided to assist with completing the **Hazardous Chemical Risk Assessment (FOR288).

NOTE: You will need a copy of the Safety Data Sheet (SDS) or the product label prior to completing this assessment.

Chemical Name

Insert the goods name in the space provided.

Source of information

Indicate the source of information you're using to fill out the form.

Are workers likely to be exposed to the chemical?

Tick the applicable box.

Routes of Entry

Tick the boxes that indicate how the chemical enters the body. Tick all applicable pathways as per the SDS.

Nature of the hazard

Indicate the nature of the hazard and its possible effects. Tick all applicable boxes.

Monitoring Requirements

Certain chemicals require monitoring under the Qld Work Health and Safety Regulation 2011. If either 'Health Surveillance' and/or 'Atmospheric Monitoring' are ticked, this product has a significant level of risk and you should consult with your Safety Advisor to discuss the chemical and its monitoring requirements.

Risk Ranking With No Controls

By reading through the SDS and the label for the product you will be able to determine the risk of the chemical without any controls in place. Use the Risk Calculator Matrix above to work out the scores.

Example: Turps is harmful and an irritant. However, the worst acute outcome is unconsciousness if exposed to high vapour concentrations.

Therefore the risk ranking will be determined as follows:

There is the chance of a medical treatment injury ('minor' consequence)

The Likelihood is 'possible'

Risk Ranking = MEDIUM

Current controls used or recommended for use

Tick any current controls and those the SDS suggests.

Personal Protective Equipment

The PPE recommended for use is contained in the SDS and should be in use when working with the chemical.

Other measures used or needed

Capture any other control measures that will be used or required to enhance the safety of the workers during use, handling or storage of the chemical.

Risk ranking using recommended controls

Reassess the risks once the controls have been implemented and then perform the risk score calculation again, taking into account the application of all the controls and the protection they offer.

Example (turps, after application of controls, such as suitable PPE):
No injury ('Insignificant' consequence)
The Likelihood is 'unlikely'
Risk Ranking = LOW

Once you have decided the risk score, circle the L, M, H or E.

Other Controls or further information

Insert any additional details in here or additional precautions; such as segregation or plans to eliminate use of the product.

Risk ranking of the Hazardous Chemical

Choose the risk ranking as a result of the risk assessment. If further investigation is required, decide who will be conducting a further review and write their name in the space provided.

Assessment team and date of assessment details

Enter the details of who conducted the assessment and the date it was completed.

Approver

A Supervisor/ Manager should sign off on the risk assessment.

Added to Register

Indicate whether the risk assessment for the hazardous chemical was added to the **Hazardous Chemical Register (FOR258)** to accompany the SDS.

Review due

Enter the latest date at which a review of the risk assessment needs to be performed. (SDS must have an active date of less than 5 years).