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CHEMICAL / HAZARDOUS SUBSTANCES

TRAINING



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TRIGGER WARNING



IMPAC is committed to creating an inclusive and safe learning environment.

Before we begin, it is essential to recognise that training often involves discussing topics that may be sensitive or evoke emotional responses. It is important to be aware that the content during this course may include discussions of potential hazards, incidents, or scenarios.

If you find any part of this course triggering or if you have concerns, please reach out our team for support or alternatively access the resources available on our website: <https://impac.co.nz/training/student-health-and-wellbeing/>


Remember, if at any point you need to step away or take a break, please do so your wellbeing is our priority.



TIPS

This handout is designed to go with an IMPAC training experience. You will need to refer to it during the training. It is yours to take away and also makes a great reference guide back in the workplace.

Please feel free to add your own notes to this handout.

As you go through this handout with your trainer use a  highlighter or underline important words as you are reading. This will make it easier to find key information later.

Use a different colour to highlight or underline words you do not understand or are unsure about, this will make it easier to find them later so that you can ask someone, or look them up.



IMPAC POLICIES

The following IMPAC's policies and process are available in IMPAC's Learner Handbook

Complaints process

NZQA Assessment process

Appeals process

The IMPAC Learner Handbook is available to download on IMPAC's website, Learning Management System and can be emailed on request.



THE IMPAC CHEMICAL / HAZARDOUS SUBSTANCES COURSE

Understand how to work safely with hazardous substances found in the workplace.

NZQA UNIT STANDARD WILL BE AWARDED BASED ON ASSESSMENT PACK

Your IMPAC course trainer will provide you with instructions as to what you need to do to achieve these standards.

As an NZQA candidate, you are expected to:

- Participate fully in the training session, discussions and activities

- Share your knowledge and experience

- Complete all assessment activities as notified by your trainer

- Take responsibility for your own learning needs

- Discuss with your trainer any assistance you may need.

If you are being disruptive, your trainer will advise you that your behaviour is disrupting learning for other trainees.

If the behaviour continues to disrupt or disturb others, your trainer will ask you to leave the course, and your PCBU will be notified immediately.



INTRODUCTION



HAZARDOUS SUBSTANCES IN THE WORKPLACE

First, we need to understand what we mean by some of the key terms used in this topic.

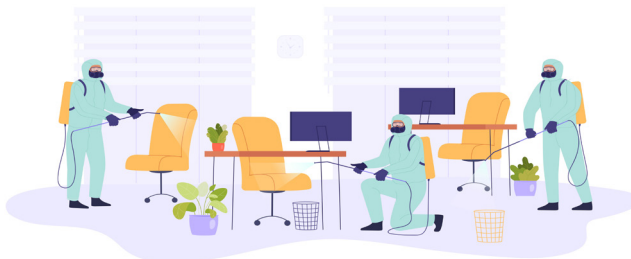
So to begin with, what is a chemical?

- + We use chemicals everyday. For e.g NaCl (), CHO ().
- + Some are harmless, some are hazardous, but some we might not be too sure about.
- + Most things are, in a sense, chemicals, so that to identify a substance as being a “chemical” is some what generalistic or arbitrary distinction in the workplace.
- + When we examine relevant legislation, we find that such substances are referred to as Hazardous Substances rather than chemicals.

What do we mean by the term “hazard”?

So what do we mean by the term hazardous substances?

Therefore, it is better to talk in terms of a “Hazardous Substance” instead of “Chemicals”.



Hence, we will generally use the term Hazardous Substances rather than Chemical throughout this course.

- + Sometimes, we may not even be aware that we are using hazardous substances or that they are present in our environment.
- + Other times we may not be sure how to properly deal with them.
- + You must ensure that you are not exposed to hazardous substance hazards.
- + If you work with hazardous substances, you need to know how you can protect yourself and others and the environment from any potential harmful effects.

List below some of the main hazardous substances that you deal with at Home and in YOUR workplace. In what way are they hazardous?

At Home	In Your Workplace

At Home	In Your Workplace
Abrasives (manufacture use)	Dusts; aluminium oxide, silicon carbide, silica, emery, carborundum. Gases/vapours; solvents, vapourised resins.
Agriculture	Fertilisers (organic and inorganic), pesticides, fungicides, herbicides, hormones, pathogens, solvents.
Blasting (sand and abrasive)	Silica, lead, cadmium, zinc, etc.
Dairying	Acids and alkalis.
Electrical components	Metal fumes (lead, cadmium, tin), solvents.
Electroplating	Acids; (chromic, sulphuric, hydrofluoric, nitric, perchloric.) Alkalis; (formaldehyde, ammonia). Metals; (nickel, lead, zinc, metal oxides, cyanide, arsenic).
Fibreglass boats/pools etc.	Styrene, glass fibre, resins, peroxide, mould release agents, alcohols, solvents
Foundries	Metal dusts and powders; sulphur dioxide, carbon monoxide, carbon dioxide, acrolein, aldehydes, phenols, isocyanates, polycyclic aromatics.
Frozen foods	Ammonia, methyl chloride, fluorocarbons.
Glass Manufacture	Silica, lead, soda ash, vanadium, arsenic, sulphur dioxide, hydrogen fluoride.
Insulation	Silica, mineral fibres, isocyanates.
Metal Treatment	Abrasives, acids, alkalis. Solvents (petroleum and chlorinated hydrocarbons, petroleum solvents.
Mining	Acids, alkalis, solvents, flotation chemicals, cyanides and other extraction chemicals.
Office Work	Ammonia, ozone, carbon (toners) chlorinated hydrocarbons, petroleum solvents.
Oil Refining	Hydrocarbon vapours, mercaptans.
Paints	Isocyanates, solvents, chromates, lead.
Plastics and Resins	Isocyanates, monomers (eg. Styrene), vinyl chloride, silica.
Paper Manufacture	Chlorine, chlorine dioxide, sulphur dioxide, sulphuric acid, methyl mercaptans, hydrogen sulfide, caustic soda.
Rubber	Acrylonitrile, butadiene, isocyanines, organic solvents, styrene carbon black.
Scrap Metal Processing	Metal fumes (lead, cadmium, mercury, zinc) welding fumes, solvents.
Soldering	Metal fumes (cadmium, lead, tin), formaldehyde, aldehydes, etc.

THE ACT DEFINES A SUBSTANCE AS:

1. Any element, defined mixture of elements, compounds or defined mixture of compounds, either naturally occurring or produced synthetically, or any mixtures thereof:
2. Any isotope, allotrope, isomer, congener, radical or ion of an element or compound which has been declared by the Authority, by notice in the gazette to be a different substance from that element of compound.
3. Any mixtures or combinations of any of the above.
4. Any manufactured article containing, incorporating, or including any hazardous substance with explosive properties.

A hazardous substance is any substance that has one or more of the following intrinsic hazardous properties:

- + Explosiveness
- + Flammability
- + Oxidising ability
- + Corrosiveness
- + Toxicity (both chronic and acute)
- + Ecotoxicity (things that kill or have adverse effects on living organisms in soil or water).

OR

- + Substances which on contact with air or water, generates a substance with one or more of the above hazardous properties.

Note: Ecotoxicity has not figured high on the New Zealand radar of hazardous properties in the old regulations, hence may be seen as something new, however it is widely referred to and controlled internationally.

Radiation is covered under the Radiation Safety Act 2016. This is the old class 7 under the HSNO classification.

BRIEF HISTORY OF CHEMICALS AND THEIR DEVELOPMENT

Since the creation of the universe, chemical reactions were taking place between various elements without being noticed by mankind. Once this phenomenon was realised and man became aware of the fact that certain chemical elements could be used to his benefit, the industry started to grow with unknown proportions.

Scientists (as well as experience) discovered that all chemical substances have a greater or lesser effect on the health of human beings. In many cases they have serious negative effects on the environment.

HAZARDOUS CHEMICAL DEFINITION

A hazardous substance is any chemical whether it be in solid, powder, liquid or gaseous form (or a mixture of these), that can cause side effects to human health through inhalation, radiation, skin contact or swallowing. Chemicals that have a degrading effect on the environment are also considered to be hazardous.

SETTING THE SCENE

In New Zealand, there are more than 150,000 places that make, use, handle, and keep dangerous chemicals.

These dangerous chemicals can be very harmful. If not used right, they can cause big accidents, like fires and explosions, and hurt people who come into contact with them. But, if used the right way, they help New Zealand's economy grow and do well.

People who work with these chemicals for a long time might get very sick slowly, and some of these sicknesses can lead to death.

Every year, between 600 and 900 people die too soon because of sicknesses they got from their jobs, including being around harmful chemicals.

There are special rules to make sure that making, using, handling, or keeping these dangerous chemicals at work is done safely and keeps workers healthy and safe

New Zealand has unacceptably high rates of workplace fatalities, serious harm injuries and work-related disease and illness.

Every hazardous substance imported into New Zealand or manufactured in New Zealand must be approved and have its classifications determined under the Hazardous Substances and New Organisms Act (HSNO). Depending on its classification, rules are placed on a substance to manage the risks posed by that substance. These rules are known as controls.

Many of which are caused by hazardous substances commonly found within our workplaces, as shown by these statistics (source: WorkSafe New Zealand):

- + Approximately 57 work-related fatal injuries annually (not including road deaths).
- + 600-900 workers per annum dying prematurely as a result of work-related diseases (e.g. airborne contaminants such as asbestos, silica, toxic gases etc.)
- + Over 5,000 serious harm notifications every year.
- + Workplace fatalities and disease cost New Zealand \$3.5 billion per year.

The Health and Safety at Work (Hazardous Substances) Regulations (the Hazardous Substances Regulations) came into effect on **1st December 2017** (refer to Legislation section).



The Hazardous Substances Regulations are part of a series of regulations provided for under the Health and Safety at Work Act 2015 (HSWA), and are administered/enforced by WorkSafe New Zealand (WorkSafe) – more on this later.

Organisations who manufacture or import hazardous substances continue to be administered by the Environmental Protection Authority (EPA) under the Hazardous Substances and New Organisms Act 1996 (HSNO) (refer to Legislation section).

Whenever a hazardous substance is present in your workplace, you need to put in place the controls for that substance. Your substance's controls come from the Regulations and the HSNO Act.

The simplest way to find out the key controls that apply to your substance is to enter its name or approval number into the Calculator. Some controls are required for every substance. In the Calculator, most of these controls are grouped together as 'Generic Controls'. Other controls apply only if you have substances in your workplace over specified threshold quantities.

NOTES





MODULE ONE:

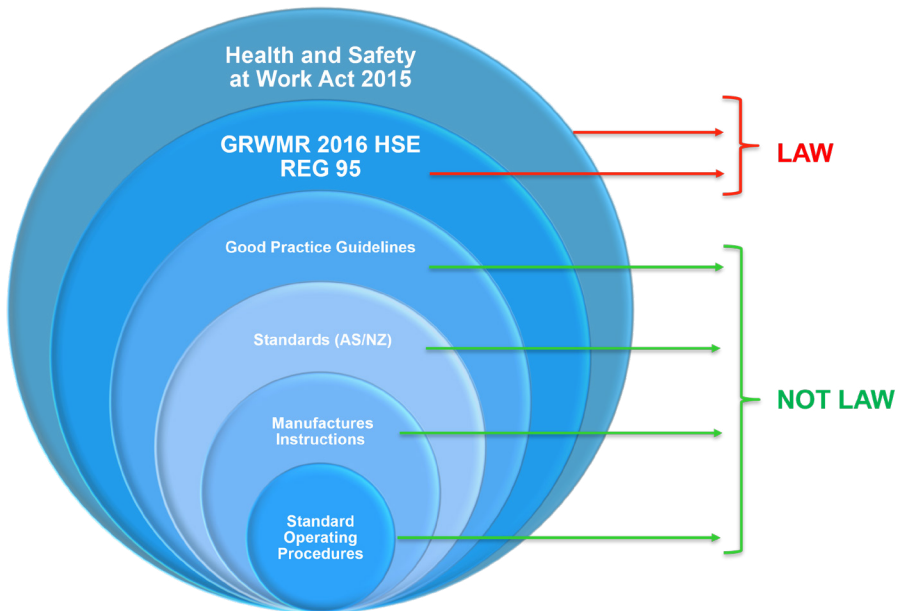
THE LEGISLATIVE FRAMEWORK

INTRODUCTION

This section focuses on the legislation pertaining to hazardous substances. It provides information on the duties (responsibilities) placed upon organisations and individuals to ensure, so far as is reasonably practicable, the health and safety of people who may be harmed by the adverse effects of these substances.

The rules and regulations pertaining to hazardous substances used within the workplace are administered by WorkSafe New Zealand (WorkSafe) under the Health and Safety at Work (Hazardous Substances), Regulations (the Regulations), as provided for within the Health and Safety at Work Act 2015 (HSWA).

However, organisations who manufacture, import or supply hazardous substances are administered by EPA under HSNO.



Health and Safety legislation relating to hazardous substances in the workplace includes, but may not be limited to:

- + The Health and Safety at Work Act 2015.
- + The Hazardous Substances and New Organisms Act 1996.
- + The Resource Management Act 1991.
- + The Health and Safety at Work (General Risk and Workplace Management) Regulations 2017.
- + The Health and Safety at Work (Hazardous Substances) Regulations 2017.

THE HEALTH AND SAFETY AT WORK ACT 2015

The Health and Safety at Work Act 2015 (HSWA) came into force on 4th April 2016, bringing new responsibilities (duties) for everyone in the workplace. HSWA is regulated by WorkSafe New Zealand (WorkSafe). It provides for a balanced framework to secure the H&S of workers and workplaces by protecting workers and other persons against harm to their health, safety, and welfare, by eliminating or minimising risks arising from work or from prescribed high-risk plant.

- + Protecting workers and other persons against harm.
- + Providing for fair and effective workplace representation, consultation, cooperation, and resolution of issues.
- + Encouraging unions and PCBU organisations to take a constructive role in providing and promoting a framework for continuous improvements.
- + Promoting the provision of advice, information, education, and training for worker.
- + Securing compliance with the Act.
- + Ensuring appropriate scrutiny and review of actions taken by persons performing functions or exercising powers under the Act.

WHO IS RESPONSIBLE?

EVERYONE IN THE WORKPLACE HAS A RESPONSIBILITY TO AVOID CAUSING HARM

- + Employers are responsible for the health and safety of employees, contractors, sub-contractors and others in the workplace.
- + Employers are responsible for the provision of appropriate PPE together with instruction on its proper use.
- + Employees are held responsible for their own health and safety and to ensure the health and safety of others.
- + Employees to make proper use of the PPE including its maintenance and replacement.
- + Contractors are responsible for their own employees and for sub-contractors; and
- + Suppliers are responsible for providing information and SDS.



DISCUSS: HOW CAN YOU HELP TO FULFILL THE EMPLOYER'S AND YOUR OWN RESPONSIBILITIES WHEN WORKING WITH HAZARDOUS SUBSTANCES?

- +** Use work practices that will protect you and other persons.

Examples?

- +** Follow instructions and guidelines (e.g. company procedures, SDS's, best practices) regarding the use of hazardous substances.

Examples?

- +** Draw the attention of your employer to any hazard or issue arising from the use of a known or a potentially hazardous substance of which you have become aware or of any perceived weakness in the control measures being used in relation to existing hazardous substances.

Examples?

- ✚ Make proper use of appropriate control measures including such things as ventilation systems, personal protective equipment (PPE) and carry out maintenance and replacement routines as applicable.

Examples?

- ✚ Participate in health and hygiene monitoring programs.

Examples?



DUTY HOLDERS UNDER THE HSW ACT

The HSW Act assigns duties to duty holders:



PERSONS CONDUCTING A BUSINESS OR UNDERTAKING (PCBU)

- P PERSON**
A legal entity.
- C CONDUCTING**
Best placed to influence the control of hazards and risks.
- B BUSINESS**
An enterprise or organisation that does things to make a profit.
- U UNDERTAKING**
An enterprise or organisation that does things but not primarily to make a profit.

DUTIES IN RELATION TO HAZARDOUS SUBSTANCES:

- +** **Training** – Workers must be trained how to work safely with hazardous substances; including what to do, the location of emergency equipment and how to use it. Training records must be maintained
- +** **Inventory** – Create and maintain an inventory of all hazardous substances. Must be readily available when required
- +** **Labels** – To be clearly displayed on all products
- +** **Safety Data Sheet (SDS)** – To be provided by the supplier or obtained by the user. Must be available for each hazardous substance in the workplace, and stored in a place where workers and emergency services can easily find them. Must be less than 5 years old and a condensed version is allowable.
- +** **Spill Kit** – Suitable for types of hazardous substances found in the workplace.



OFFICERS

An officer is a person who holds a very senior leadership position and has the ability to exercise significantly influence over the management of the business (PCBU), such as the Chief Executive. An Organisation may have more than one officer.

Officers must exercise due diligence to make sure that the PCBU complies with its health and safety duties.



WORKER

HSWA defines a worker as an individual who carries out work in any capacity for a business (PCBU), which includes work as an employee, contractor or subcontractor, labour hire worker, apprentice or trainee, or a volunteer worker.

A worker has a duty to:

- + Take reasonable care for his or her own health and safety
- + Take reasonable care to ensure that their actions do not adversely affect the health and safety of other persons
- + Comply with any reasonable instruction that is given by the PCBU to allow the PCBU to comply with HSWA or regulations
- + Co-operate with any reasonable policy or procedure of the PCBU relating to health or safety at the workplace that has been notified to workers.



OTHER

'Other people/person at the workplace' is someone at the workplace who is not a worker or PCBU.

Duties:

- + Take reasonable care for their own health and safety
- + Take reasonable care that others are not harmed by something they do, or do not do
- + Comply, as far as they are reasonably able, with the PCBU's reasonable health and safety instructions that are given so that the PCBU can comply with HSWA or regulations.

HAZARDOUS SUBSTANCES AND NEW ORGANISMS ACT 1996

Introduced in 1996, the purpose of Hazardous Substances and New Organisms Act 1996 (HSNO) is to protect the environment, and the health and safety of people and communities, by preventing or managing the adverse effects of hazardous substances and new organisms. This includes:

- + The safeguarding of the life-supporting capacity of air, water, soil, and ecosystems.
- + The maintenance and enhancement of the capacity of people and communities to provide for their own economic, social, and cultural well-being and for the reasonably foreseeable needs of future generations.

The introduction of HSWA has not revoked the Hazardous Substances and New Organisms Act 1996 (HSNO).

However, HSNO has been revised to work alongside and complement HSWA. Its scope to regulate those organisations who manufacture, import or supply hazardous substances, and to focus on those substances that pose a threat to our environment – known as ecotoxic substances (or Class 9 substances).

HSNO continues to be administered and regulated by the Environmental Protection Authority (EPA) – refer to Regulatory Authorities section for further details.



HEALTH AND SAFETY AT WORK (HAZARDOUS SUBSTANCES) REGULATIONS 2017

Introduced on 1st December 2017, the purpose of the Hazardous Substances Regulations is to bring focus to the safe management of hazardous substances in the workplace. As with HSWA, the Hazardous Substances Regulations are enforced by WorkSafe.

It's not about wholesale change. Effectively the regulation of hazardous substances in the workplace is moving from one Act and set of regulations to another, but with some changes.

The hazardous substances regulations, much the same as the previous regulations, will affect the following:

- +** Any PCBU that has an involvement with hazardous substances in the workplace, these include:
 - Manufacturers of hazardous substances.
 - Facilities that store hazardous substances.
 - Organisations who sell hazardous substances.
 - Organisations that distribute hazardous substances.
 - Organisations who dispose of hazardous substances.
 - Organisations that use hazardous substances within the workplace

- +** Workers who use, handle and/or store hazardous substances in the workplace.

- +** Other persons that have an involvement with hazardous substances in the workplace.

WHAT DOES THIS MEAN?

The Hazardous Substances Regulations bring a clear focus to the following key requirements:

Information, Training, Instruction and Supervision

Hazardous substances are present in many forms in products that we use on a daily basis:

Some examples:

- + Paint
- + Medicines
- + Ammunition
- + Fire works
- + Aerosols
- + Cleaning products



Workers need to understand the risk of harm posed by hazardous substances and how to keep safe around them. As long as we use these products as prescribed, they are deemed to be harmless. The problems start when we are not trained and educated to the effects that these chemicals may have if they are not stored, used/applied and disposed of in the correct manner

Both the General Risk and Workplace Management Regulations, and the Hazardous Substances Regulations places duties on a PCBU to provide information, training, instruction and supervision.

The Hazardous Substances Regulations explicitly state that a PCBU must ensure, so far as is reasonably practicable, that every worker who uses, handles, manufactures or stores a hazardous substance has the knowledge and practical experience to do so safely.

Workers should be told if there's any work with dangerous chemicals happening where they work. They need to know where to find details about each dangerous chemical, how to handle and keep them safely, and what to do if there's an emergency.

WHAT KIND OF TEACHING AND PRACTICE DO THEY NEED?

Workers must learn and then do practical work under someone's watch about:

- + The health dangers and safety problems from the dangerous chemicals they use.
- + The right way to use, handle, make, keep, and throw away these chemicals.
- + How to use the equipment safely, including clothes and gear that protect them.
- + What the rules say they must do.
- + What they should do and who they should tell if there's an emergency.

Even if a worker has learned about these things before (like at another job), they need to learn about the specific ways things are done at their new job.

TRAINING RECORDS

You must keep complete and updated records of training and instructions provided to each worker, this information needs to be available at any time to WorkSafe inspectors or compliance certifiers.

TRAINING RECORDS

You must keep complete and updated records of training and instructions provided to each worker, this information needs to be available at any time to WorkSafe, inspectors or compliance certifiers.

WHAT SUPERVISION IS REQUIRED?

You must provide supervision, where necessary, to protect workers from the risks of working with, or being exposed to, the hazardous substances in their workplace. This includes supervising the use of equipment used for hazardous substances.

Deciding what supervision is necessary will depend on the nature of the risks and the knowledge and experience of the worker. As with any workplace health and safety risks it must reflect:

- + The work involved
- + The risks associated with the work
- + Any measures in place to manage the risks.



NOTES



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MODULE TWO:
RISK MANAGEMENT

RISK MANAGEMENT

Risk management is important for all work-related health and safety. The Hazardous Substances Regulations require you to know the risks associated with hazardous substances in your workplace, take appropriate measures to manage the risks and to review these regularly.

There is a similar Hazard Control Hierarchy to be applied to Hazardous Substance Control as there is for any other type of hazard:

- + Elimination - Stop using the chemical altogether.
- + Substitution - Use non-hazardous or less hazardous chemicals instead.
- + Isolate hazardous processes and the substances involved

Isolation techniques include:

- Ensuring adequate ventilation to remove the product from the breathing zone of workers.

Ensuring appropriate storage of chemicals by:

- Identifying each chemical container with the product name and that of the manufacturer and any necessary warning labels and symbols.
- Never use contaminated containers.
- + Minimisation
 - Reduce the amount of chemicals involved to the absolute minimum.
 - Dilute chemical to reduce the hazard.
 - Personal Monitoring
 - Work Environment Monitoring
 - General Environment Monitoring

- + Personal Hygiene including:
 - Good food hygiene
 - Regular change of clothes
 - Use of barrier creams and gloves
 - Regular washing of hands and forearms
 - Good house keeping
 - Use of personal protective equipment
 - Cleanliness hygiene of PPE and work clothing.
- + Safety signs identifying high risk situations and work areas.
- + Safe work procedures should take into consideration all the risks and hazards
- + Emergency plans to deal with any spills or releases and fire/explosion.

Note: Information is needed not only about the particular substance being used, but also about what happens when two or more substances are combined in a process or a product, what affects such energy sources as heat and light or combustion processes are involved and what are the resulting properties of by-products and finished products.





Step 1: Identify Hazards

When managing the risk presented by hazardous substances, the first step is to identify the type and nature of the hazards that exist within the workplace. To do this it is important that the PCBU engages with its workers as they are often best placed to know what could cause harm.

Step 2: Assess Risks

Having identified the hazards, the next step is to assess the level of risk in terms of the consequence and the possibility of the harm occurring. Assessing the risk also determines those hazards that should be managed without delay.

Step 3: Manage Risks

In managing the risk, the PCBU should first consider whether it is possible to eliminate the risk. If the risk cannot be eliminated, then it must be minimised using control measures.

Hazards are controlled by a combination of local controls specific to the hazard, for example the use of appropriate PPE when working with hazardous substances, and Management controls that ensure that local controls are consistently implemented and are adequate e.g. SOPs, PTW etc.

Eliminate the Risk

Where reasonably practicable, the hazard/risk must be eliminated. Elimination is the most effective control measure. A hazard may be eliminated through engineering or by redesigning the process or task.

Examples may include:

- + Replacing a harmful chemical with a non-hazardous substance
- + Construction of an automated cleaning system in a vessel so as to eliminate the need for people to enter i.e. clean in place (CIP).

If eliminating the hazard is not reasonably practicable, the hazard must be minimised.

Minimise the Risk

Minimising the hazard/risk is the process of reducing the severity or impact of the hazard on the worker. It attempts to protect the worker from the hazard rather than treating the hazard directly.



Examples of minimising hazardous substances might include:

Screens to minimise exposure from splashes of chemicals or hazardous substances.

- + Locking and tagging out sources of harm
- + Bunding or containment of chemical storage facilities or preventing spillage to drains and waterways by diverting or damming
- + Barricading of an area to prevent unauthorised entry
- + **Reduction process** – including reducing the impact of a hazard through the likes of ventilation, containment of hazardous substances and proper disposal
- + **Monitoring** – the atmosphere for the existence of contaminants, medical monitoring of workers potentially exposed so as to ensure controls such as hearing protection is working
- + **Administrative controls** – including training in the work process, treatment of hazards, use of work permits
- + **Fire Fighting Equipment** – such as fire extinguishers, hose reels, sprinklers, fire blankets
- + **Personal Protective Equipment (PPE)** – the last line of defence in protecting the worker. Items may include chemical goggles, face mask, gloves, overalls, apron, breathing apparatus (BA) etc.

Another example of taking a reasonably practicable approach would be FOLLOW ADVICE FROM A SAFE WORK INSTRUMENT. As part of this process, adequate supervision is required to ensure correct handling actions are being taken by personnel.

Monitoring will be required to ensure exposure levels do not exceed the recommended levels listed in the WES. Health monitoring of personnel may also be required for certain hazardous substances, such as organophosphates.

Step 4: Monitor Control Measures

In managing the risk, it is important that the control measures being applied are monitored to ensure firstly that they continue to be used by the workers, and secondly that they remain effective – in that they continue to minimise the work risk.

Review for Continuous Improvement

Risk Management requires an ongoing never-ending cycle of review. Regular review will enable the PCBU to identify any new hazards or risks to be managed.

How do I manage hazardous substances risks?

First you need to know what you've got. Create an inventory of the hazardous substances manufactured, used, handled or stored in your workplace.

When you know the substances and likely quantities that you will hold:

1. Consider whether you need them or are there any you can eliminate or substitute with a safer product.
2. For the remaining substances, put in place the technical controls from the Hazardous Substances Regulations.
3. Assess your workplace and identify if any risks remain that you need to manage.

4. Use the hierarchy of controls to determine the most effective control measures to minimise those risks.



5. Monitor the performance of the control measures.



6. Maintain and review the control measures.



What do I have to consider when I'm assessing risk?

In managing risks, a PCBU should consider the following:

- + The amount of the hazardous substance in the workplace.
- + Any related physico-chemical hazards.
- + Possible reactions with other substances.
- + Ignition sources.
- + Structures, plant or systems of work involved.
- + The risk and degree of exposure to the substance by those carrying out the work involved.
- + Any prescribed exposure standards.
- + The length of time after uses that entry is restricted.

Also consider the knowledge and experience of the workers exposed to the hazardous substances.

How do I know what controls to apply?

Safety data sheets are a key source of information about the requirements for each hazardous substance in your workplace. Safety data sheets are mandatory under the new Substances Regulations.

After preparing your inventory, you can enter the substances into the Hazardous Substances Calculator to find the key controls you must apply across all the hazardous substances in your workplace.

The Hazardous Substances toolkit: www.hazardoussubstances.govt.nz

When do I have to review my risk management?

You need to review and revise your risk management requirements at least every five years, or after:

- + A significant change to a hazardous substance's safety data sheet, or to the information about it in your inventory.
- + Any notifiable event in the workplace involving a relevant hazardous substance.

You must also provide training and instruction to staff to make sure they can work safely with and around the hazardous substances.



MODULE THREE

HAZARDOUS SUBSTANCES

HAZARDOUS SUBSTANCES

This section focuses on the hazardous substances themselves. It provides information on how you can recognise them, and how the adverse effects of these substances may cause harm to you, the environment, and/or your organisation.

DEFINITION

The **Hazardous Substances and New Organisms Act 1996** defines a hazardous substance as “any substance with one or more intrinsic hazardous properties above levels specified in New Zealand legislation”. (EPA notices, as the HSNO Act still refers to Regulations).

The Hazardous Properties are:

- + An explosive nature (including fireworks)
- + Flammability
- + Ability to oxidise (i.e. create its own oxygen and/or accelerate a fire)
- + Corrosiveness
- + Toxicity (poisonous) – acute or chronic
- + Can generate a hazardous substance on contact with air or water.

Physical Forms of Hazardous Substances

Hazardous substances effectively come in one of four physical forms:

- + **Solid:** Phosphorus, rat poison, hexamine
- + **Dust/Powder:** Milk powder, coal dust, granulated chlorine
- + **Liquid:** Fuels (oil, petrol, diesel), acids/alkalis, alcohol
- + **Gas/Vapour:** LPG, Chlorine.

Note: Dusts and powders may be grouped together as solids.

Hazardous chemical substances are not a phenomenon that is found at specific or selected locations. They are a reality of life and are found at places that are part of our daily walk of life. A few examples are:

OUR HOMES

Here we can expect to encounter hazardous chemicals such as:

- + Detergents and other cleaning materials
- + Bleaching agents
- + Pesticides (Doom or Raid etc.)
- + Pain killers etc

FILLING STATIONS

This is a place that we visit on almost a daily basis that houses highly flammable hazardous chemical substances such as:

- + Petrol
- + Diesel
- + Motor engine oil
- + Liquid petroleum gases etc

HARDWARE STORES

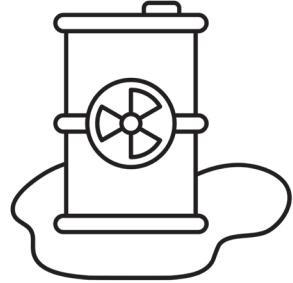
Hardware stores usually stock a large variety of chemicals and other products that consist of a combination of various chemical elements such as:

- + Paint
- + Fertilisers
- + Pesticides
- + Solvents etc.

INDUSTRIAL SITES

This is usually places where the largest variety of hazardous chemicals is found in bulk quantities. These are chemicals such as:

- + Sulphur
- + Sulphuric acid
- + Hydrogen
- + Caustic soda
- + Fuel oils
- + Diesel
- + Chlorine and many more.



ADVERSE EFFECTS OF HAZARDOUS SUBSTANCES

The adverse effects of hazardous substances may depend on the substance and the reaction caused by the substance coming into contact with a person, object, or other substance.

Intrinsic Property	Adverse Effects	Example
Explosives	Explosion / Fire	Dynamite
Flammable Liquids	Fire / Burn	Petrol
Flammable Solids	Fire / Burn	Carbon
Oxidisers and Organic Peroxides	Supports Combustion	Chlorine
Toxic	Poisonous to humans	Arsenic
Corrosive	Eats metal, skins, eyes	Caustic soda
Exotoxic	Poisonous to eco-systems	Diesel

Note: Radioactive fall outside the scope of both HSNO and HSWA.

HEALTH HAZARDS ASSOCIATED WITH HAZARDOUS CHEMICAL SUBSTANCES

As mentioned earlier, hazardous chemical substances can be dangerous to human health. This means that they could cause various kinds of sicknesses and disease to people who are exposed to them.

Thanks to scientific research, the effects that most chemicals have on humans is a known fact, e.g. people exposed to low doses of SO₂ may experience no effect except for slight burning of the chest and eyes whereas persons that are exposed to high doses may die from fluid in the lungs. (Pulmonary Oedema).

EFFECTS ON THE HUMAN BODY

Hazardous chemicals may either affect the human body acutely or chronically.

ACUTE AFFECTS

An acute effect is one that happens over a very short period of time after exposure. Acute effects are likely to be severe, but are easily detected and normally resolve fairly quickly.

Typical examples of acute effects are irritation of the skin (causing a rash) or irritation of the upper airway (causing burning sensation in the nose and throat) usually caused by chemicals such as ammonia.



CHRONIC AFFECTS

A chronic effect is where the symptoms develop over a much longer time. The person may only notice the effects of the exposure after several years have passed after having been exposed. He may not even remember having worked with the chemical that is responsible for causing the problem.

This makes it hard to establish a connection between the health effect and the chemical to which the person was exposed. Typical examples of chronic effects are lung diseases that could be caused by silica or cancer caused by repeated small doses of radioactivity.

Allergic reactions that causes skin rashes or asthma may initially be acute. If it continues indefinitely it may become chronic if it is not diagnosed and treated in the early stages.

CHEMICAL TOXICITY

The effects of chemical toxicity of different elements on humans may range from acute to fatal depending on the concentration of the toxicant.

The effects of toxicants have been established for the majority of hazardous chemical substances through scientific research that was conducted through experiments in test tubes or on animals. This information must be listed on the Safety Data Sheets (SDS) of each hazardous chemical substance. The hazardous chemical supplier must provide the end-user of the chemicals with an SDS for each chemical supplied.

Below is a discussion of the most common toxic effects that chemical toxicity may have on human life.

ACUTE AFFECTS

Irritation: A substance with irritant properties will cause an itching/burning sensation to the part of the skin with which it comes into contact, resulting in a rash on the skin surface. If such a substance is inhaled, it will cause burning of the throat, nose, chest and eyes. Substances that have irritating effects include sulphur dioxide (SO₂), Ammonia, fibreglass etc.

Corrosion: A corrosive substance is either a strong base acid or alkali/base that causes severe burning and possible scarring of the part of the body that it comes into contact with. Substances that have corrosive effects include Sulphuric acid, Sulphur, Sodium Hydroxide etc.

Asphyxiation (Suffocation): Asphyxiation means that oxygen cannot get from the lungs to the various parts of the body where it is needed. This is known as Anoxia (Oxygen deficiency in the body tissue).

In many cases, we may be unaware of the fact that our bodies are not receiving sufficient oxygen, unless we know the subtle effects of acute anoxia.

These effects may include:

- + Headaches
- + Increase in heart beat rate
- + Increase in breathing rate
- + Severe fatigue
- + Ultimate death

- + Convulsion (violent irregular motion of limb by involuntary contraction of muscles).
- + Gaspings.
- + Failure of breathing ability and consequent heart seizure.
- + Irreversible brain damage and,
- + Ultimate death.

A large number of hazardous substances that promote asphyxiation are used in almost every sector of industry. These can be divided into two distinct classes:

- + **Simple Asphyxiants which include substances such as:** Acetylene, Carbon Dioxide, Hydrogen and Nitrogen, to name a few.
- + **Chemical Asphyxiants (Blood poisons)** – These asphyxiants prevent the body from utilising oxygen that is readily available.

The following explains the three ways in which chemical asphyxiation manifests.

CARBON MONOXIDE

(CO) is a gaseous substance that reacts more readily with blood than oxygen.

This causes the red oxygen carrying protein that contains the iron that is present in the red blood cells (Haemoglobin) to bond with the CO instead of the oxygen.

This process forms Carbon Dioxide (CO₂) in the red blood cells resulting in oxygen starvation of the cells.

HYDRAZINE

Liberates the red oxygen carrying protein (Haemoglobin) from the red blood cells. The result is that the blood is not able to transport oxygen to the body.

BENZENE AND TOLUENE

As with Hydrazine and Carbon Monoxide, these substances may also result in severe side effects in the oxygen carrying ability of red blood cells.

ANAESTHESIA

A patient receives anaesthetic to put him to sleep before an operation. Chemicals that have an anaesthetic effect may cause unconsciousness. This is caused by fumes from solvents such as thinners.

SENSITISATION

Once a person is sensitised to a certain chemical, he will react to it whenever he comes into contact with it. Repeated contact with such a chemical may result in the person becoming allergic to it. **Typical examples are:**

- + Skin sensation – resulting in eczema.
- + Airway sensitisation – resulting in asthma.

CHRONIC EFFECTS

Lung Fibrosis: (Thickening and scarring of connective tissue) – Some dusts are considered to be nuisance dusts, as they may cause some irritation but do not have any permanent damaging effects.

Other dusts may result in fibrosis of the lungs. These dusts include: Asbestos and Coal which may result in Chronic Bronchitis, Asbestosis and Tuberculosis.

Brain and Nerve Damage: Some toxic metals and solvents can cause permanent damage to the brain and nervous system.

Mercury can effect the parts of the brain that controls the ability to think and move. Mercury and Hexane effects the nervous system resulting in muscle weakness and loss of feeling in the limbs.

Effects on Other Organs (Liver, kidneys etc.): Certain chemicals may affect body organs quite seriously. A few examples are:

- + Carbon Tetrachloride can cause serious permanent damage to the liver.
- + Benzene affects the blood cells.
- + Cadmium affects the kidneys.

Affects on the Human Reproductive System: Certain chemicals may permanently damage the ability of the male and female reproductive system rendering them unable to have children.

Chemicals causing reproductive effects with males include lead and Dibromochloropropane (DBCP). This chemical counteracts sperm production causing abnormalities and a consequent decreased sperm count.

With the female reproductive system, several solvents and chemicals affect menstruation. Exposure to lead and anaesthetic gases may cause harm to foetuses in pregnant women.

Cancer: Cancer is said to be any malignant growth or tumour from an abnormal and uncontrolled division of the body cells.

Chemical substances known to cause cancer include:

- + Chrome
- + Nickel
- + Polyvinyl
- + Chloride
- + Arsenic
- + Certain plastics etc.

CONDITIONS REQUIRED TO BE AFFECTED BY HCS

For any person to be affected by a **Hazardous Chemical Substance**, three conditions must prevail:

- + The chemical must be toxic or capable of causing harm.
- + The person must have contact with it in such a way that it can be absorbed by the body.
- + The dose or toxic concentration of the chemical must be sufficient to have a harmful effect.

Some people may be more easily affected than others, for example, someone who has asthma is more likely to be affected by chemicals that irritate the airways. Someone with a liver problem is likely to be affected by solvents.

EXPOSURE TO HAZARDOUS CHEMICAL SUBSTANCES

A hazardous chemical substance may enter the human body in four different ways:

+ Inhalation (In-breathing)

Chemicals in the form of fumes, dust or vapours can be breathed into the lungs where they can cause harm. From the lungs, these toxic chemicals may be transferred into the blood stream and delivered to other parts of the body where it can cause harm.

+ Absorption Through the Skin

Certain chemicals are easily absorbed through the skin from where they are also transferred into the blood stream.

+ Ingestion (Swallowing)

Swallowing of toxic chemicals usually occur under the following circumstances:

- Eating and drinking contaminated products.
- Poor personal hygiene after handling toxic chemical substances.
- Deliberate swallowing (suicide attempt).

+ Radiation

Radiation has severe effects on the somatic and genetic cells of the human body. Radiation can either occur externally or internally.

External radiation is caused by radioactive sources outside the body, whereas internal radiation may be the result of radioactive materials entering the body through respiration, ingestion or skin penetration.

The severity of the radiation depends on the type of radiation, the dose rate, the dose frequency and part of the body that is exposed.

There are three types of radiation:

X-RAY AND GAMMA RADIATION

Under controlled conditions, these types of radiation are useful, especially in the medical field where it is used for examinations. This is because they are electromagnetic forms of radiation and have no particular electrical charge.

However, when these are not properly controlled, they have the potential to have “Somatic and/or Genetic” effects.

+ **Somatic** = Bodily injury.

+ **Genetic** = Effect on reproduction.

ALPHA RADIATION

This type of radiation is very dangerous when inhaled or ingested. This is because of the high positive electrical charge that is an inherent property of the radiation particles.

BETA RADIATION

Beta radiation has a more penetrating power than Alpha Radiation and has a negative electrical charge. Large doses have the ability to cause serious damage to skin tissue.

Beta particles that enter the body through open wounds or through ingestion or inhalation can cause organ damage similar to that caused by Alpha Particles.

PATHWAYS INTO THE ENVIRONMENT

Entry into the environment	Adverse Effects (What effect does it have on the environment)
Atmosphere (Air)	Hazardous vapours/smoke from a factory or contaminated air could cause air pollution
Land	Uncontrolled weed spraying can affect trees and plants and animals
Water	Hazardous substance used to dip sheep is not disposed of correctly, in turn can affect marine life and animals
Vertebrates	Cross-contamination with hazardous substances.
Invertebrates	Sprays can enter waterways which can harm invertebrates



NOTES



WARNING
CCTV and VIDEO RECORDING
IS BEING USED ON THESE
PREMISES FOR CRIME
PREVENTION & PUBLIC
PROTECTION

SITE SAFETY

All visitors and drivers must report to site office

	High visibility jackets must be worn		Danger Deep excavations
	Report all accidents immediately		Danger Stop. Look. Listen. Beware of trucks



MODULE FOUR:

HAZARDOUS SUBSTANCES CLASSIFICATIONS SYSTEMS

HAZARDOUS SUBSTANCES CLASSIFICATIONS SYSTEMS

This has been superseded by the GHS Revision 7 as from 30 April 2021.

The HSNO Classification system used numbers and letters to identify a substance. With the GHS it works as follows:

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) is the culmination of more than a decade of work. The work spans a wide range of expertise from fire protection to toxicology and required extensive good will on the part of nations and individuals to compromise towards a common aim. The essential premise is to move towards a globally harmonized system (GHS) to address classification, labelling and safety data sheets for chemicals the world over.

A lot of work on a similar premise had taken place over many years prior to 1992 largely to do with transport of hazardous goods. The UNCETDG (United Nations Committee of Experts on Transport of Dangerous Goods) already had a system in place which addressed many of the concerns but did not address workplace or consumer sector issues.

The international mandate that provided the impetus for the GHS work was adopted in 1992 and is reflected in what has become commonly known as “Agenda 21”. This says “A globally harmonized hazard classification and compatible labelling system, including national safety data sheets and easily understandable symbols, should be available, if feasible by the year 2000”.

There is a long way to go yet before we can truly say that there is a comprehensive Globally Harmonized System.

GHS Class: This tells you what the intrinsic hazardous property of the substance is. (Example; Explosive, toxic, Corrosive etc.)

GHS Category: This varies from Category 1 downwards, the bigger the number gets the less harmful the substance. Example: Under the HSNO Classification system, a highly toxic substance that requires a Certified Handler would be number as 6.1A, under the GHS classification system that same substance would be, Acute toxicity: oral/ skin/ inhalation

Type of Hazard: This is broken up into three categories: Physical / Health / Environmental

PHYSICAL, HEALTH AND ENVIRONMENTAL HAZARD CLASSIFICATIONS

Hazardous substances fundamentally fall into three groups of classifications based on their hazardous properties. The classifications are broken up into physical, health and environmental hazards.

HSNO Classification	Equivalent GHS Class	Equivalent GHS Category	Type of Hazard
	Explosives	Unstable explosives	Physical hazards
1.1 (A, B, C, D, E, F, G, J, L)	Explosives	Division 1.1	Physical hazards
1.2 (B, C, D, E, F, G, H, J, K, L)	Explosives	Division 1.2	Physical hazards
1.3 (C, F, G, H, J, K, L)	Explosives	Division 1.3	Physical hazards

HSNO Classification	Equivalent GHS Class	Equivalent GHS Category	Type of Hazard
1.4 (B, C, D, E, F, G, S)	Explosives	Division 1.4	Physical hazards
1.5 (D)	Explosives	Division 1.5	Physical hazards
1.6 (N)	Explosives	Division 1.6	Physical hazards
2.1.1A	Flammable gases (including chemically unstable gases)	Flammable gas category 1	Physical hazards
2.1.1B	Flammable gases (including chemically unstable gases).	Flammable gas category 2	Physical hazards
	Flammable gases (including chemically unstable gases).	Chemically unstable gas category A	Physical hazards
	Flammable gases (including chemically unstable gases).	Chemically unstable gas category B	Physical hazards
2.1.2A (flammable aerosols)	Aerosols (flammable)	Category 1	Physical hazards
	Aerosols (flammable)	Category 2	Physical hazards
	Aerosols (non-flammable)	Category 3	Physical hazards
Compressed gases	Gases under pressure	Compressed gas	Physical hazards
		Liquefied gas	
		Refrigerated liquefied gas	
		Dissolved gas	
3.1A	Flammable liquids	Category 1	Physical hazards
3.1B	Flammable liquids	Category 2	Physical hazards

HSNO Classification	Equivalent GHS Class	Equivalent GHS Category	Type of Hazard
3.1C	Flammable liquids	Category 3	Physical hazards
3.1D	Flammable liquids	Category 4	Physical hazards
3.2A	Liquid desensitised explosives	Liquid desensitised explosives	Physical hazards
3.2B	Liquid desensitised explosives	Liquid desensitised explosives	Physical hazards
3.2C	Liquid desensitised explosives	Liquid desensitised explosives	Physical hazards
4.1.1A	Flammable solids	Category 1	Physical hazards
4.1.1B	Flammable solids	Category 2	Physical hazards
4.1.2A	Self-reactive substances and mixtures	Type A	Physical hazards
4.1.2B	Self-reactive substances and mixtures	Type B	Physical hazards
4.1.2C	Self-reactive substances and mixtures	Type C	Physical hazards
4.1.2D	Self-reactive substances and mixtures	Type D	Physical hazards
4.1.2E	Self-reactive substances and mixtures	Type E	Physical hazards

HSNO Classification	Equivalent GHS Class	Equivalent GHS Category	Type of Hazard
4.1.2F	Self-reactive substances and mixtures	Type F	Physical hazards
4.1.2G	Self-reactive substances and mixtures	Type G	Physical hazards
4.1.3A	Solid desensitised explosives		Physical hazards
4.1.3B	Solid desensitised explosives		Physical hazards
4.1.3C	Solid desensitised explosives		Physical hazards
4.2A	Pyrophoric liquids	Category 1	Physical hazards
4.2A	Pyrophoric solids	Category 1	Physical hazards
4.2B	Self-heating substances and mixtures	Category 1	Physical hazards
4.2C	Self-heating substances and mixtures	Category 2	Physical hazards
4.3A	Substances and mixtures which, in contact with water, emit flammable gases	Category 1	Physical hazards
4.3B	Substances and mixtures which, in contact with water, emit flammable gases	Category 2	Physical hazards

HSNO Classification	Equivalent GHS Class	Equivalent GHS Category	Type of Hazard
4.3C	Substances and mixtures which, in contact with water, emit flammable gases	Category 3	Physical hazards
5.1.1A	Oxidizing liquids	Category 1	Physical hazards
	Oxidizing solids	Category 1	Physical hazards
5.1.1B	Oxidizing liquids	Category 2	Physical hazards
	Oxidizing solids	Category 2	Physical hazards
5.1.1C	Oxidizing liquids	Category 3	Physical hazards
	Oxidizing solids	Category 3	Physical hazards
5.1.2A	Oxidizing gases	Category 1	Physical hazards
5.2A	Organic peroxides	Type A	Physical hazards
5.2B	Organic peroxides	Type B	Physical hazards
5.2C	Organic peroxides	Type C	Physical hazards
5.2D	Organic peroxides	Type D	Physical hazards
5.2E	Organic peroxides	Type E	Physical hazards
5.2F	Organic peroxides	Type F	Physical hazards
5.2G	Organic peroxides	Type G	Physical hazards
8.1A	Corrosive to metals	Category 1	Physical hazards

HEALTH HAZARDS

HSNO Classification	Equivalent GHS Class	Equivalent GHS Category	Type of Hazard
6.1A	Acute toxicity: oral	Category 1	Health hazards
	Acute toxicity: skin	Category 1	Health hazards
	Acute toxicity: inhalation	Category 1	Health hazards
6.1B	Acute toxicity: oral	Category 2	Health hazards
	Acute toxicity: skin	Category 2	Health hazards
	Acute toxicity: inhalation	Category 2	Health hazards
6.1C	Acute toxicity: oral	Category 3	Health hazards
	Acute toxicity: skin	Category 3	Health hazards
	Acute toxicity: inhalation	Category 3	Health hazards
6.1D	Acute toxicity: oral	Category 4	Health hazards
	Acute toxicity: skin	Category 4	Health hazards
	Acute toxicity: inhalation	Category 4	Health hazards
6.1E	Acute toxicity: oral (Not adopted by GHS Rev 7)	Category 5	Health hazards
	Acute toxicity: skin (Not adopted by GHS Rev 7)	Category 5	Health hazards
	Acute toxicity: inhalation (Not adopted by GHS Rev 7)	Category 5	Health hazards
6.1E	Aspiration hazard	Category 1	Health hazards
6.1E (respiratory tract irritant)	Specific target organ toxicity (single exposure)	Category 3	Health hazards
8.2A	Skin corrosion/irritation	Category 1A	Health hazards
8.2B	Skin corrosion/irritation	Category 1B	Health hazards
8.2C	Skin corrosion/irritation	Category 1C	Health hazards

HEALTH HAZARDS

HSNO Classification	Equivalent GHS Class	Equivalent GHS Category	Type of Hazard
6.3A	Skin corrosion/irritation	Category 2	Health hazards
6.3B	Skin corrosion/irritation (Not Adopted by GHS Revision 7)	Category 3	Health hazards
8.3A	Serious eye damage/eye irritation	Category 1	Health hazards
6.4A	Serious eye damage/ eye irritation	Category 2	Health hazards
6.5A	Respiratory sensitization	Category 1	Health hazards
6.5B	Skin sensitization	Category 1	Health hazards
6.6A	Germ cell mutagenicity	Category 1	Health hazards
6.6B	Germ cell mutagenicity	Category 2	Health hazards
6.7A	Carcinogenicity	Category 1	Health hazards
6.7B	Carcinogenicity	Category 2	Health hazards
6.8A	Reproductive toxicity	Category 1	Health hazards
6.8B	Reproductive toxicity	Category 2	Health hazards
6.8C	Reproductive toxicity	Effects on or via lactation	Health hazards
6.9A	Specific target organ toxicity (single exposure)	Category 1	Health hazards
	Specific target organ toxicity (repeated exposure)	Category 1	Health hazards

HEALTH HAZARDS

HSNO Classification	Equivalent GHS Class	Equivalent GHS Category	Type of Hazard
6.9B	Specific target organ toxicity (single exposure)	Category 2	Health hazards
	Specific target organ toxicity (repeated exposure)	Category 2	Health hazards
6.9B	Specific target organ toxicity (single exposure) (Narcotic effect)	Category 3	Health hazards

NOTE: The EPA have not adopted acute toxicity Category 5. This is the equivalent of HSNO 6.1E acute toxicity classification. Substances that were 6.1E due to aspiration hazard will be captured under aspiration hazard Category 1.

ENVIRONMENTAL HAZARDS

HSNO Classification	Equivalent GHS Class	Equivalent GHS Category	Type of Hazard
9.1A	Aquatic toxicity (acute)	Category 1	Environmental hazards
9.1A	Aquatic toxicity (chronic)	Category 1	Environmental hazards
9.1B	Aquatic toxicity (chronic)	Category 2	Environmental hazards






HSNO Classification	Equivalent GHS Class	Equivalent GHS Category	Type of Hazard
9.1C	Aquatic toxicity (chronic)	Category 3	Environmental hazards
	Aquatic toxicity (acute) (Not Adopted by GHS Revision 7)	Category 2	Environmental hazards
	Aquatic toxicity (acute) (Not Adopted by GHS Revision 7)	Category 3	Environmental hazards
9.1D	Aquatic toxicity (chronic)	Category 4	Environmental hazards












GLOBALLY HARMONISED SYSTEM OF CLASSIFICATION & LABELLING OF CHEMICALS (GHS)











The GHS was designed to replace all the diverse classification systems throughout the world and present one universal standard that all countries should follow (however, the GHS is not compulsory under UN law).

















The system provides the infrastructure for participating countries to implement a hazard classification and communication system, which many less economically developed countries would not have had the money to create themselves.











In the longer term, the GHS is expected to improve knowledge of the chronic health hazards of chemicals and encourage a move towards the elimination of hazardous chemicals, especially carcinogens, mutagens and reproductive toxins, or their replacement with less hazardous ones.



Physical Hazards	
Hazard Class & Pictogram	Hazard Classification
Explosives (Class 1) 	Unstable explosive
	1.1 (A, B, C, D, E, F, G, J, L)
	1.2 (B, C, D, E, F, G, H, J, K, L)
	1.3 (C, F, G, H, J, K, L)
	1.4 (B, C, D, E, F, G, S)
	1.5 (D) *
Aerosols 	Aerosol Category 1
	Aerosol Category 2
	Aerosol Category 3*
Oxidizing Gases 	Oxidising gases Category 1
Flammable Liquids 	Flammable liquids Category 1
	Flammable liquids Category 2
	Flammable liquids Category 3
	Flammable liquids Category 4*
Flammable Solids 	Flammable solids Category 1
	Flammable solids Category 2


Physical Hazards	
Hazard Class & Pictogram	Hazard Classification
Self-Reactive Substances and Mixtures 	self-reactive substances and mixtures Type A 
	self-reactive substances and mixtures Type B 
	self-reactive substances and mixtures Type C 
	self-reactive substances and mixtures Type D 
	self-reactive substances and mixtures Type E 
	self-reactive substances and mixtures Type F 
	self-reactive substances and mixtures Type G*
Pyrophoric liquids 	Pyrophoric liquids Category 1
	Pyrophoric solids Category
Self-heating substances and mixtures 	Self-heating substances and mixtures Category 1
	Self-heating substances and mixtures Category 2
Substances and mixtures which, in contact with water, emit flammable gases 	Substances and mixtures which, in contact with water, emit flammable gases Category 1
	Substances and mixtures which, in contact with water, emit flammable gases Category 2
	Substances and mixtures which, in contact with water, emit flammable gases Category 3
Oxidising liquids 	Oxidising liquids Category 1
	Oxidising liquids Category 2
	Oxidising liquids Category 3


Physical Hazards	
Hazard Class & Pictogram	Hazard Classification
Oxidising Solids 	Oxidising solids Category 1
	Oxidising solids Category 2
	Oxidising solids Category 3
Oxidising Peroxides 	Organic peroxide Type A 
	Organic peroxide Type B 
	Organic peroxide Type C 
	Organic peroxide Type D 
	Organic peroxide Type E 
	Organic peroxide Type F 
	Organic peroxide Type G*
Corrosive to Metals 	Corrosive to metals Category 1
Desensitised Explosives 	Desensitised explosive Category 1
	Desensitised explosive Category 2
	Desensitised explosive Category 3
	Desensitised explosive Category 4

Health Hazards		
Hazard Class & Pictogram	Hazard Classification	
<p>Acute Toxicity</p>  	<p>Acute oral toxicity Category 1</p> <p>Acute dermal toxicity Category 1</p> <p>Acute inhalation toxicity Category 1</p> 	
	<p>Acute oral toxicity Category 2</p> <p>Acute dermal toxicity Category 2</p> <p>Acute inhalation toxicity Category 2</p> 	
	<p>Acute oral toxicity Category 3</p> <p>Acute dermal toxicity Category 3</p> <p>Acute inhalation toxicity Category 3</p> 	
	<p>Acute oral toxicity Category 4</p> <p>Acute dermal toxicity Category 4</p> <p>Acute inhalation toxicity Category 4</p> 	
	<p>Note: Acute toxicity Category 5 has not been adopted*</p>	
	<p>Skin Corrosion/irritation</p>  	<p>Skin corrosion Category 1A</p> 
		<p>Skin corrosion Category 1B</p> 
		<p>Skin corrosion Category 1C</p> 
<p>Skin irritation Category 2</p> 		
<p>Note: Skin irritation Category* has not been adopted.</p>		
<p>Serious eye damage/ eye irritation</p>  	<p>Serious eye damage Category 1</p> 	
	<p>Eye irritation Category 2</p> <p>Note: the subcategories 2A and 2B have not been adopted</p> 	

Health Hazards		
Hazard Class & Pictogram	Hazard Classification	
Respiratory or Skin Sensitisation 	Respiratory sensitisation Category 1 Respiratory sensitisation Sub-category 1A Respiratory sensitisation Sub-category 1B 	
	Skin sensitisation Category 1 Skin sensitisation Sub-category 1A Skin sensitisation Sub-category 1B 	
	Germ Cell Mutagenicity 	Germ cell mutagenicity Category 1 Germ cell mutagenicity Category 2
	Carcinogenicity 	Carcinogenicity Category 1 Carcinogenicity Category 2
Reproductive Toxicity 	Reproductive toxicity Category 1 Reproductive toxicity Category 2 Effects on or via lactation	
Specific target organ toxicity - single exposure 	Specific target organ toxicity – single exposure Category 1 	
	Specific target organ toxicity – single exposure Category 2 	
	Specific target organ toxicity – single exposure Category 3 	

Health Hazards	
Hazard Class & Pictogram	Hazard Classification
Specific target organ - repeated exposure 	Specific target organ toxicity – repeated exposure Category 1
	Specific target organ toxicity – repeated exposure Category 2
Aspiration Hazard 	Aspiration hazard Category 1
	Note: Aspiration hazard Category 2 has not been adopted

Environmental Hazards	
Hazard Class & Pictogram	Hazard Classification
Hazardous to the aquatic environment 	Hazardous to the aquatic environment acute Category 1
	Hazardous to the aquatic environment chronic Category 1
	Hazardous to the aquatic environment chronic Category 2
	hazardous to the aquatic environment chronic Category 3*
	Hazardous to the aquatic environment chronic Category 4*
	Note: hazardous to the aquatic environment acute Category 2 and acute Category 3 have not been adopted

Environmental Hazards	
Hazard Class & Pictogram	Hazard Classification
Hazardous to the terrestrial environment 	**The EPA has adopted the following non-GHS classifications to classify substances that are hazardous to the terrestrial environment as provided for in clause 15 of the Hazardous Substance notice 2020.
	Hazardous to soil organisms.
	Hazardous to terrestrial vertebrates.
	Hazardous to terrestrial invertebrates.
	Designed for biocidal action.

* No Pictogram

** Hazard Classifications for Agrichemicals That are Hazardous to the Terrestrial Environment

A substance that is hazardous to the terrestrial environment is classified as a hazardous substance only if it is—

- a. an agrichemical; or
- b. an active ingredient used in the manufacture of an agrichemical that is a pesticide or a veterinary medicine.

SDS Reference: Section 2 lists the Hazardous Substances classifications of a product.

The other set of symbols (shown below) are used during the Transportation of Dangerous Goods (by road, rail, sea, air), and are known colloquially as **Dangerous Goods (DG) Regulations**.

Despite there being two sets of regulations pertaining to these symbols, it is not uncommon to see both sets of symbols used at the same time, particularly on transportable containers.



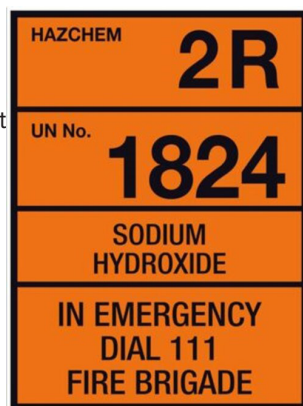
UN Numbers:

UN numbers are a four-digit code assigned to a substances, or group of similar substances, by the United Nations Committee of Experts on the Transport of Dangerous Goods (UNCETDG).

Example: Petrol 1203.

Chemical Abstract Service (CAS) Number:

The CAS Number is an internationally recognised unique number given to a hazardous substance that allows for its immediate identification.



Example: Petrol 86290-81-5

HAZCHEM Code

The HAZCHEM Code is a three-character code displayed on all dangerous goods classed carriers, that provides emergency responders (i.e. fire and police) with information on what actions to take during the emergency phase of the incident.

Example: Petrol: 3YE

HAZCHEM Codes are characterised by a single number (1 to 4) and either one or two letters (depending on the hazard).

3YE

The use of these codes is to be encouraged; however they are primarily designed for emergency service professionals and may not effectively warn staff, visitors or the public of the action required.

However, whilst you may not know what the code means, it should still be passed onto the emergency services, as this will enable them to prepare for their arrival on site.

HAZCHEM Emergency Action Code		<table border="1"> <tr> <td>Substance</td> <td>Class</td> </tr> <tr> <td>UN No.</td> <td>Label</td> </tr> <tr> <td>HAZCHEM</td> <td></td> </tr> <tr> <td colspan="2">Contacts</td> </tr> </table>		Substance	Class	UN No.	Label	HAZCHEM		Contacts	
Substance	Class										
UN No.	Label										
HAZCHEM											
Contacts											
FOR FIRE OR SPILLAGE											
1	COARSE SPRAY										
2	FINE SPRAY										
3	FOAM										
4	DRY AGENT										
•	ALCOHOL RESISTANT FOAM										
P	V	LTS	DILUTE								
R											
S	V	BA & FIRE KIT	DILUTE								
T											
W	V	LTS	CONTAIN								
X											
Y	V	BA & FIRE KIT	CONTAIN								
Z											
E	PUBLIC SAFETY HAZARD										

Additional Information

DRY AGENT
Water **must not** be allowed to come into contact with the substance at risk.

ALCOHOL RESISTANT FOAM #2 or #3
Alcohol resistant foam is the preferred medium.
If not available:
- If #2 – use Fine Spray or Water Fog
- If #3 – use Normal Protein Foam

V
Substance can be violently or even explosively reactive, including combustion.

LTS
Liquid-Tight Chemical Protective Suit with BA.
Full **FIRE KIT** should also be worn for thermal protection if the substance is:
or Liquid Oxygen
or Liquefied Toxic Gas (Division 2.3)
or Toxic Gas with sub-risk 2.1 or 5.1
or Class or sub-risk 3
or Division 5.1 PGI with sub-risk 6.1 or 8
or carried at temperature > 100 °C

DILUTE
May be washed to drain with large quantities of water.

CONTAIN
Prevent, by any means available, spillage from entering drains or water course.

E
People should be warned to stay indoors with all doors and windows closed – but evacuation may need to be considered. Consult Control, Police and product expert.

Inventory

It's important to know what hazardous substances you have in order to safely manage their risks to people and the environment.

If you don't know what hazardous substances you have, how can you protect yourself from them?

An inventory is a list of hazardous substances (including hazardous waste) that are used, handled, manufactured or stored at any workplace that you, as a person conducting a business or undertaking (PCBU), manage or control.

It will help you understand the substances you have on site, work out the requirements you must comply with and plan your emergency procedures.

Your inventory will help you tell emergency workers, compliance certifiers or health and safety inspectors what hazardous substances you have. It must be readily accessible to any emergency service workers attending the workplace, both during an emergency and after the workplace has been evacuated.

For each hazardous substance your inventory must include:

- + The substance's name and UN number (if available).
- + The maximum amount likely to be at the workplace.
- + Its location(s).
- + Any specific storage and segregation requirements.
- + A current safety data sheet or a condensed version of the key information from the safety data sheet.
- + Any hazardous waste (which may include used spill kit materials).

Do you know what hazardous substances you have in your workplace?

NOTES



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MODULE FIVE:
HAZARDOUS SUBSTANCES -
IDENTIFICATION

IDENTIFICATION

It is vitally important that the user can identify hazardous substances accurately and promptly, particularly in an emergency situation.

Manufacturers and suppliers must identify for the user the classifications of the hazardous substance so that they might manage or control the substance safely.

Information on hazardous substances may come from a number of sources, such as:

- + Hazardous Substance Regulations
- + Workplace Exposure Standards (WES)
- + Safety Data Sheets (SDS)
- + Product Safety Card
- + WorkSafe / EPA Websites
- + Suppliers / Manufacturers / Importers
- + UN Number
- + CAS Number
- + HAZCHEM Code

SAFETY DATA SHEETS

Safety Data Sheets (SDS) provide comprehensive information about the properties of a hazardous substance, how it affects health and safety in the workplace and how to manage these risks.

A SDS explains how the substances should be safely used, stored, transported, and disposed of. It provides first aid information, information about the personal protective equipment that the person handling the substance should wear and what to do in the event of an emergency, such as a spill or fire.

A SDS should be reviewed/amended every 5 years.

Duties of a PCBU:

With regards to SDSs, an organisation (PCBU) has a duty to ensure:

- + That a current SDS is held for each of the hazardous substances at their workplace, regardless of the quantity held.
- + That the SDS is readily available e.g. is capable of being accessed without difficulty in hard copy, electronic, or other form.
- + That workers will also need to be trained on and made aware of the dangers associated with a new hazardous substances, or on an existing substance when the SDS changes.

It is also a mandatory requirement for a supplier to provide a HSNO compliant SDS with their products.

When a Safety Data Sheet may not be required:

You don't need an SDS for:

- + A hazardous substance that is in transit.
- + A hazardous substance that is a consumer product to be used in quantities consistent with household use.
- + A hazardous substance in a retailer's premises that is a consumer product **and** is in that workplace only for the purpose of supply to other premises **and** is not intended to be opened on the retailer's premises.
- + Anhydrous ammonia contained in equipment that forms part of any other equipment in which anhydrous ammonia is used as a refrigerant (unless the quantity of anhydrous ammonia is more than 100 kg).

However, in any of these exclusions you must make sure that information about the safe use, handling and storage of the substance is readily accessible to workers.



Labelling

Labels are placed on hazardous substance containers so that people, including workers and emergency services personnel, know what's inside and can take the correct precautionary measures.

It's never safe to have hazardous substances in unlabelled, or incorrectly labelled containers. Never put hazardous substances in food or drink containers, even if they're labelled. People can get confused about what's in their container and eat or drink the content by mistake.

Labelling is a very important part of hazardous substance management. Labels provide the necessary information to manage hazards of the substance in order to protect both people and the environment. The information on a label is often the first information available to a person if there is an emergency.

Label requirements include:

- + Substances that have come from a supplier and are therefore already labelled.
- + Substances that you decant or transfer into a smaller container at your workplace.
- + Stationary tanks, process containers and transportable containers.
- + Hazardous waste.

What are my responsibilities around the products I buy that already have labels?

Manufacturers and suppliers are responsible for correctly labelling the products they sell you.

If you are supplied with hazardous substances, you must make sure that the label is maintained; that it stays on the container and can be read.

If you manufacture hazardous substances for your own business – that is, not intended for supply outside the workplace – you must label your containers.

What do I have to do if I decant or transfer a hazardous substance into another container?

It is recommended that you keep the substance in the supplier's original container unless you need to transfer it for a good reason.

If you decant or transfer substances from a large container into smaller ones (e.g. for ease of use), the containers must be labelled. Labels must be in English and include:

- + The product name or chemical name
- + Hazard pictogram
- + Hazard statement consistent with the substance's classification.
- + Precautionary statements
- + Signal Word

How do I label stationary tanks, process containers and transportable containers?

As well as the product name or chemical name, and hazard pictogram and hazard statement, there are some extra requirements for these types of containers:

- + Stationary tanks and process containers containing class 1 – 5 substances must also include the steps required to prevent unintended explosion, ignition, combustion, acceleration of fire or thermal decomposition.
- + Transportable containers must be accompanied by labelling as specified in land transport, maritime and civil aviation laws (on or near the container).

What if I create a hazardous waste product?

Containers of hazardous waste must also be labelled. This may sound difficult if it's not a recognised 'product' and you don't know the precise hazardous properties. **Your label will need to be in English and:**

- + Identify, as closely as possible, the nature of the waste (for example, chlorinated solvent waste, flammable waste); and
- + The name, address and business phone number of the producer of the waste (if known); and
- + A hazard pictogram and hazard statement consistent with the classification of the waste (if known) based on its known or likely constituents.

Signs

How do emergency services, visitors and your workers know what hazardous substances you have on site and the protection or precautionary measures they should take? Signs provide clear, concise information and are often the first warnings people will have about your hazardous substances.

Signs are placed at key points on your site, such as entranceways and on buildings, or in outdoor areas, where hazardous substances are used or stored.

They should be clearly visible and let people know that hazardous substances are present, the general type of hazard and what to do in an emergency.

This allows people to approach the site with appropriate care.

There are special sign requirements for some substances, e.g. fumigants and vertebrate toxic agents (VTAs).



When do I need signs?

Signs are required when you have hazardous substances exceeding specified quantities.

Even if you aren't required to have signs, it is best practice always to have them as they warn other people at the workplace, and emergency services, that hazardous substances are present.



What needs to be on the sign?

There are some requirements for signs generally. For example, they must be made out of a durable material that won't easily fade. They must be in plain English, readily understandable, and the information (correct words and pictograms) must be clearly visible and legible from not less than 10 metres away under varying conditions (for example, rain or poor light).

There are some new requirements such as a new sign for transit depots; the word **EXPLOSIVES** required for Class 1 substances; and the word **HAZCHEM** required for class 2, 3, 4, 5, 6, or 8 substances.

Where do I put my signs?

Signs need to be placed close to where the hazardous substances are stored, but not too close, because people need to know that the danger is there before it's too late.

If hazardous substances are located in a building at a workplace, signs must be at every vehicle and pedestrian entrance to the building and the property.

If hazardous substances are in a room inside the building, signs should be at each entrance to that room.

If hazardous substances are outdoors, a sign must be next to that area.

Don't put signs:

- + Where they may be hidden
- + Beside doors or gates that cover the sign when they're open
- + Above doors, or anywhere smoke may conceal the sign.

What do I have to do to maintain my signs?

Signs must be maintained and up-to-date. Signs that can't be read or don't accurately reflect the hazardous substances on site will not help to keep people safe.

This means you must change your signs (as soon as practicable) if there is a change in the type, class, or quantity of hazardous substances present at the workplace that requires different information to be displayed.

You must ensure that your signs are clean, in good repair and not covered or obscured.








MODULE SIX: **PACKAGING**

Regulation 2.12 of the Hazardous Substances Regulations places a duty on a PCBU in relation to packaging of decanted or transferred substances where the substance is decanted or transferred from a container in the workplace for use within that workplace.

Hazardous Substances need to be packaged in containers strong enough to prevent potentially hazardous incidents. There are three requirements that need to be considered in determining the appropriateness of packaging for any hazardous substance. These are:

-  The general requirements, relating to 'fit for purpose' i.e. the package must be suitable for the substance it contains.
-  The United Nation's Packing Group requirements relating to hazardous properties i.e. notably the United Nation's Transport of Dangerous Goods Model regulations where three 'Packing Groups' are identified; PG I, PG II and PG III (see Packing Groups Table below)
-  Additional packaging requirements. Some hazard classifications have additional packaging requirements. For example, child resistant closures are required for packages holding less than 2.5kg of substances with certain toxic or corrosive hazard.

Any manufacturer or importer packing or repacking hazardous substances will need to ensure that the packaging is designed and constructed specifically for use with that particular hazardous substance.

For most businesses, the practical effect of packaging is limited to repackaging hazardous substances and re-using containers on site as the container the hazardous substances has been supplied in should already meet the packaging requirements.

Note: The same rules apply to repackaging as they do to the original packing.

A key control is to know exactly what we are dealing with. Good Inventory Control is a vital measure in ensuring that we are able to identify substances that are hazardous. In turn this will enables us to see what we have to deal with and to effectively manage the hazards from the time the substance is brought into the organisation to the point that it is disposed of or used.




An example of a Hazardous Substance Register is included at Appendix 3. This can also be used as a basis for assessing the requirements under law (HSNO) for such additional controls as Approved Handlers and Location Certificates.

As with all other commodities the acquisition, usage and disposal of hazardous substances needs to be fully controlled. Documentation relating to purchase and usage should be cross referenced to the inventory control procedures to ensure that the types of substance brought into the organisation are of the correct type and that there is up to date information available to the people who will be handling and using them.

Where new or different substances are acquired these need to be subject to rigorous identification and assessment processes to ensure that their respective hazardous properties are properly controlled. Each organisation should have its own procedures for dealing with acquisitions and needs to ensure that these are integrated with processes that deal with health and safety and environmental management.

What is a bund and what is its primary purpose?

Key points:

-  All bund valves on bulk storage containers are to be kept in the closed position.
-  All bunds are to be free of rainwater, and
-  All bunds are to be free of debris and clutter.

What does this mean?

Hazardous substances must not be transported or stored together with goods with which they are likely to react and thus cause danger to any person, property or the environment (incompatible).

All incompatible hazardous substances must be adequately separated from each other during transport and in storage.

An example of a systematic way to segregate hazardous substances for storage and transportation is with the use of the “Hazardous Substances Segregation Wheel”. This is also available in chart form.

These can be purchased from Standards New Zealand.

Phone: (04) 498 5991

Email: snz@standards.co.nz

Similar products are available from other sources such as the New Zealand Chemical Industry Council (NZCIC)

The NZCIC website address is: <http://www.nzcic.org.nz>





MODULE SEVEN: KEY CONTROL MEASURES

KEY CONTROL MEASURES

The first step in controlling any hazards is to understand them. In the case of hazardous substances this is sometimes difficult because the hazards are not easily recognised from looking at the substance itself. Many of the substance related hazards do not give rise to immediate harm but may lead to illness or other health damaging effects sometimes many years after initial exposure.

Short exposures to some substances do not give rise to any significant effects and people can easily become complacent about the information that they have available and may even ignore health and safety instructions out of mistaken understanding. It is important that all persons who may come into contact with substance related hazards are trained and are given clear instructions about the potential for harm and how to avoid exposure.



Some key points to consider are:

- + There are many different hazardous substances used in industry. These should all be identified and an up to date inventory maintained (See an example of Hazardous Substance Register in Section 4).
- + You must identify the potential harmful effects of the hazardous substances that you are handling or might otherwise be exposed to.
- + Each must be categorised according to the hazard(s) posed to the person handling it and to others who may be otherwise exposed.
- + There are a number of different approaches to categorising hazardous substances and related information: e.g. HSNO, UN, HAZCHEM.
- + Classes, Categories, Emergency Action Codes etc should all be contained in the Safety Data Sheets (SDS's) and on the HAZARDOUS SUBSTANCE labels on containers.
- + Harm can be immediate or delayed and can vary considerably in its extent and its duration.
- + Harm can be ACUTE and/or CHRONIC.

What is the difference between Acute and Chronic Harm?





NOTES

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MODULE EIGHT:
HAZARDS TO THE
ENVIRONMENT

HAZARDS TO THE ENVIRONMENT

So far we have been concerned about the harm that Hazardous Substances can cause to persons and to property. Many substances can directly or indirectly cause harm to the environment. Environmental Pollution can occur when a hazardous substance is released into the environment in an uncontrolled manner.

This can be in the form of:

- + Spills and Leaks.
- + Releases to the atmosphere.

Both can occur inside the work area or in the outside environment and can lead to environmental damage, and can be the source of fuel for fire or explosion and may also pose health hazards. The damage may be immediate or delayed, from a single or a prolonged release. There may be delayed effects from a series of releases whether accidental or routine or uncontrolled releases due to poor or even no control measures being applied.

Substances classified as Ecotoxic can have effects ranging from immediate to long term and can effect the whole environment or just part of it e.g. marine life, mammals etc.





MODULE NINE:
PERSONAL PROTECTIVE
EQUIPMENT

INTRODUCTION

The fundamental requirement for all PPE is that it is considered to be “fit for purpose” i.e. the right piece of equipment or clothing for the task in hand, and that the people required to use or wear it have sufficient knowledge and understanding to do so effectively and safely.

Other people who may not be working directly with a hazardous substance but may be affected by the adverse effects of the substance, are also to wear suitable PPE to protect them from harm.

- + The nature, extent and effect of the hazard must be identified before specifying and issuing PPE.
- + The wearer must understand the uses and limitations of PPE.



Note: In certain cases, medical evaluation may be required.

E.g. asthmatics required to wear respiratory protection should have a medical assessment to determine if they are able to wear a respirator.

PPE CAN ONLY BE EFFECTIVE IF IT IS OF THE CORRECT TYPE, IN GOOD CONDITION, FITTED PROPERLY, WORN, AND USED CORRECTLY.

FIT TESTING

Every wearer of a respirator should undergo a qualitative respirator fit test.

The purpose of the fit test is to:

1. Ensure the respiratory protective device fits the person who is wearing it so that he or she is adequately protected.
2. Clearly demonstrate to the employee that when the respirator is properly worn (using positive and negative pressure tests), a good degree of protection is given.

Factors that are considered are:

- + Worker's physical and psychological health,
- + Type of PPE to be used, and
- + Conditions of use.
- + Order of contaminated clothing removal.
- + Decontamination procedures.



PPE LEVELS

Levels of PPE range from Level A (maximum protection), to Level D (minimum protection). Appendix 2 shows charts which can be used to aid selection of PPE.

The Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 (the GWRM Regs), describe, at Sections 15-20, the general duties of duty holders in relation to the provision, use and maintenance of PPE.

Duty to provide PPE

Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 (GRWM Regulations)

Regulations 15-17 – General duty of the PCBU to provide personal protective equipment.

A PCBU who directs the carrying out of work at a workplace must provide personal protective equipment (PPE) to workers carrying out the work unless the PPE has been provided by another PCBU.

Duty to wear PPE

Regulation 18 – Duty of the Worker to wear or use PPE

The worker must wear or use the PPE in accordance with any information, training, or reasonable instruction by the PCBU.



PPE LEVELS

Duty to ensure PPE is worn

Regulation 19 – Duty of PCBU to ensure personal protective equipment worn or used by other persons ...

... is capable of minimising risks to that person's health and safety (e.g. it is fit for purpose; and that the person wears or uses the equipment).

Respiratory Protective Equipment

Whilst Respiratory Protective Equipment (RPE) falls under the generic category of PPE, such is the level of risk associated with using RPE it is extremely important that the requirements of Australian/New Zealand Standards (AS/NZS) 1715 and 1716 are fully complied with.

SDS Reference: Section 8 lists the PPE requirements for a particular substance.

Handlers should always refer to the product SDS and conduct a full risk assessment when determining the most appropriate type of PPE. Examples include, but may not be limited to:

Chemical Goggles

Goggles provide a better level of protection from chemical splashes than standard safety glasses. Goggles with a high air flow can help to prevent fogging issues.

Face Shields

In addition to providing ballistic protection, face shields also provide protection to the facial area (i.e. eyes, nose and mouth) from chemical and blood-borne hazards.

Face shields may be worn with or without traditional protective eyewear depending on the requirements of the substance's SDS, for example LPG may require the user to wear both chemical goggles and a face shield.

Respiratory Protective Equipment (RPE)

RPE, whilst primarily designed to protect our respiratory system, also prevents the inadvertent entry of substances to the digestive system, by covering two of the main entry points into the body, namely the nose and mouth. Full-face systems will also provide protection to the eyes and facial skin area.

RPE can provide either half or full face protection and may be designed to be either disposable or reusable, according to the manufacturer's instructions. Full face RPE may also incorporate a hood, which provides additional protection to the head and neck area.

When working in extremely dusty atmospheres the cotton gauze type of face mask may be inadequate and a full face or half face air purifying respirator may be required.

Where air purifying respirators are used, the correct type of filter to suit the exposure shall be fitted. Only filter cartridges that are known to have adequate life remaining shall be used. If there is any doubt, a fresh cartridge shall be used.

Note: Work requiring the use of a supplied-air respirator, such as Breathing Apparatus, is Notifiable and WorkSafe must be informed 24 hours in advance.

Chemical Suits

Suitable work wear that is appropriate for the work to be undertaken, which may include, amongst others, overalls, aprons, chemical suits etc, shall be worn based on the results of a risk assessment and the guidance provided in SDSs.



PPE LEVELS

Protective Footwear

Suitable protective footwear, whether safety boots/shoes or chemical boots (gumboots), shall be worn when handling hazardous substances.

Protective footwear may be made of polyurethane, PVC, neoprene latex and can provide resistance to fats, fluids, petro-chemical, agri-chemical substances.

As with gloves, protective footwear must provide protection from the effects of permeation (i.e. passage of the chemical through its structure) and degradation (i.e. damage to the material through cracking or holing etc).

Chemical Gloves

Chemical gloves come in many shapes, sizes, materials and colours and as such selecting the right glove for the right application can be a bit of a 'minefield'.

As with footwear, protective gloves must provide protection from the effects of permeation (i.e. passage of the chemical through its structure) and degradation (i.e. damage to the material through cracking or holing etc).

Additionally, not only does the glove need to protect the user from the adverse effects of the hazardous substance, but it also needs to provide a level of dexterity and grip that enables the wearer to handle containers safely

Maintenance and Cleaning of PPE

Provision for maintaining and cleaning PPE shall be provided to prevent the cross-contamination or the inadvertent spread of the adverse effects of hazardous substances.

NOTES



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MODULE TEN: EMERGENCY MANAGEMENT





INTRODUCTION

Even the most safety conscious organisation can have an emergency involving hazardous substances.

As well as observing the rules around managing your hazardous substances, you, your workers, and emergency service workers need to know what to do – and who is responsible for what – in an emergency.



What is a hazardous substances emergency?

Hazardous substances are, by their nature, dangerous. Here are just some examples of the kinds of emergencies that can occur:

-  A worker being poisoned by ingesting or inhaling a toxic substance
-  A worker being burnt by a corrosive substance
-  A fire caused by flammable or oxidising substances, or
-  Hazardous substances leaking or spilling from their containers, injuring people and contaminating land and waterways.

How do I prepare for an emergency?

Preparing for an emergency depends on the types and amounts of hazardous products you use and store. Mandatory actions include:

-  Training your workers what to do in the event of an emergency. They also need to know where the safety and first aid equipment is stored and how to use it.
-  Ensuring your inventory of hazardous substances is accessible to any emergency service provider, both during an emergency and after the workplace has been evacuated.

- +** Having a Safety Data Sheet for each hazardous product at your workplace; and storing SDSs in a place where workers and emergency services can easily find them. Safety data sheets provide information on the hazardous substances, including on first aid and what to do in the event of an emergency.
- +** Be prepared to deal with a spill or leak of hazardous substances. Spill kits for small spills can be bought from safety equipment suppliers, or make a kit to suit your needs. The equipment needed in your kit will depend on what hazardous substances you have and the amount that could be spilled.

Note: Refer to Annex A: Chemical Spill Procedure

What is an Emergency Response Plan?

To minimise the effects of an emergency, workplaces that deal with certain substances must:

- +** Have a written emergency response plan (ERP)
- +** Be tested at least every 12 months (or within three months if there is a change to your plan).

Your ERP must include a description of what you will do to:

- +** Call emergency services
- +** Warn people at the workplace and nearby about the emergency
- +** Advise people how they can protect themselves
- +** Help or treat anyone injured in the emergency
- +** Manage the emergency to restrict its effects to the initial area, reduce its severity and if possible, eliminate it.



	Reasons for selection:	Procedure for contact:	Advice & Notification:
National Poison Centre	If ingestion, absorption or inhalation of a hazardous substance has taken place.	0800 764 766 24 hour free phone	For advice
0800 CHEMCALL	For advice on containing and successfully managing chemical-based incidents	0800 CHEMCALL Available 24/7 Payment service	For specialist advice
Emergency Services	In the event of an emergency	Dial 111	For immediate assistance from police, fire or ambulance.
Commercial providers	For a particular chemical in an emergency	IXOM for explosives BOC for gases	For advice on a particular chemical



MODULE ELEVEN:
SPILLS & DISPOSALS

SPILLS

Wherever there is a chance that a substance can be accidentally spilled it is important to have in place methods to reduce the consequences of that spill. It is sensible to prevent spillage in the first place and thus avoid having to deal with a spill at all. However, there may be times when spillage cannot be prevented in which case there must be suitable equipment, personnel and procedures in place to deal with it.

The main elements of a spill procedure are:

- +** Secure the scene.
- +** Enter the area only when wearing appropriate protective equipment.
- +** Any efforts to rescue persons, protect property or the environment must be weighed up against the possibility that you could become part of the problem.
- +** Do not assume that gases or vapours are harmless just because of the lack of smell. Odourless gases or vapours may be harmful due to toxicity or simply due to displacement of Oxygen. Example: Several workers died in an Auckland sewer due to Carbon Monoxide poisoning in a confined space.
- +** All equipment (including PPE) and personnel should undergo the decontamination procedures.
- +** Any personnel who have been exposed to hazardous substances should undergo medical monitoring.



RENDERING DRUMS AND OTHER CONTAINERS SAFE FOR REUSE

- + When a drum or container is empty, it is to be marked empty with an appropriate label.
- + When a container has been cleaned for reuse or recycling, it is to be marked with a “Flushed” label.
- + Wastes that are transported in bulk by open-topped truck are to be identified by way of a manifest and tracking information held by the driver (in accordance with Road Transport Regulations).
- + Note: If a drum or other container is to be machine or flame cut this must be done with great care. See OSH/DoL publication Hot Work on Drums and Tanks published March 1998 ref ISBN 0-477-03420-9.

DISPOSAL

Disposal of unused, waste or of a substance that has been cleaned up after a spillage must be carried out in a safe manner. As well as protecting workers carrying out the disposal operations consideration must be given to:

- + Other persons who may be involved in the disposal chain.
- + Persons including children who may come into contact with the substance at a future time.
- + Animals that may come into contact with the substance during its disposal and remaining lifecycle up to the point that it becomes (harmless if ever).
- + The effects on the environment in the short and long term.

There are many specialist organisations who have the expertise and facilities for proper disposal of hazardous substances. They will provide advice and information on what should be done and will have the expertise to manage the hazardous waste in a safe and legally sound manner.

Waste materials and in particular hazardous wastes must not be discarded haphazardly and must be treated with as much respect as has been necessary throughout their useful lives. Just because the substance is no longer of use does not mean that it has somehow ceased to be hazardous.

How do the agencies work together?

	 Hazardous substance rules to PROTECT PEOPLE from WORKPLACE activities <small>SET UNDER THE ACT*</small>	 Hazardous substance DISPOSAL rules and rules to protect the ENVIRONMENT in WORKPLACES* <small>SET UNDER THE ACT**</small>	 Hazardous substance rules for IMPORTERS, MANUFACTURERS and SUPPLIERS** <small>SET UNDER THE ACT**</small>	 Hazardous substance rules to PROTECT PEOPLE and the ENVIRONMENT in NON-WORKPLACES <small>SET UNDER THE ACT**</small>
Regulator	WORKSAFE	 Environmental Protection Authority <small>To Haze South East</small>	 Environmental Protection Authority <small>To Haze North East</small>	 Environmental Protection Authority <small>To Haze North East</small>
Enforced by	WORKSAFE	WORKSAFE	 Environmental Protection Authority <small>To Haze North East</small>	COUNCILS***

* These are other hazardous substance environmental and disposal rules set under the Resource Management Act and local council bylaws. These rules are enforced by local, district and regional councils.
 ** Such as labelling, packaging, safety data sheets and restrictions on ingredients in certain hazardous substances products.
 *** City and district councils.

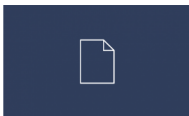


Hazardous substances

This section contains information about managing your hazardous substances safely, key regulations and how to become a certified handler. It also contains our practical guidance and statutory registers and records.



Managing your



Hazardous



Certification,



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MODULE TWELVE: REGULATORY AUTHORITIES

REGULATORY AUTHORITIES

The hazardous substances reforms brought about changes to the roles of both the Environmental Protection Agency (EPA) and WorkSafe New Zealand (WorkSafe).

Broadly, EPA continue to have responsibility for approving and classifying hazardous substances; while WorkSafe will administer and enforce workplace requirements provided in the Regulations.

	Hazardous substance rules to PROTECT PEOPLE from WORKPLACE activities <small>SET UNDER HSW ACT</small>	Hazardous substance DISPOSAL rules and rules to protect the ENVIRONMENT in WORKPLACES* <small>SET UNDER HSNO ACT*</small>	Hazardous substance rules for IMPORTERS, MANUFACTURERS, and SUPPLIERS ** <small>SET UNDER HSNO ACT*</small>	Hazardous substance rules to PROTECT PEOPLE and the ENVIRONMENT in NON-WORKPLACES <small>SET UNDER HSNO ACT*</small>
Regulator				
Enforced by:				COUNCILS***

* There are other hazardous substance environmental and disposal rules set under the Resource Management Act and local council bylaws. These rules are enforced by local, district, and regional councils.

** Such as labelling, packaging, safety data sheets and restrictions on ingredients in certain hazardous substances products.

*** City and district councils

THE ENVIRONMENTAL PROTECTION AUTHORITY

EPA focus on 'upstream' activities under HSNO – it continues to receive applications for approval to import or manufacture new hazardous substances, assess the risks and decide whether the substances should be approved for use in New Zealand.

EPA continues to be responsible for setting the rules for classification, labelling, safety data sheets, packaging and disposal, as well as for protecting the environment and public health.

EPA NOTICES

Most of the hazardous substance rules that EPA remains responsible for are to be set in **EPA Notices** rather than by regulation.

EPA Notices are approved by the EPA Board rather than going through Cabinet. This allows the notices to be updated quickly, allowing the EPA to keep up to date with international and technological changes.

EPA Notices will make it easier for you to comply with the HSNO Act because they contain almost all of the rules you need to know about a particular subject – like labelling for example – in one place.

The Notices will particularly reflect the rules for importers and manufacturers of hazardous substances as well as non-workplace use, environmental controls and hazardous substances disposal controls.

WORKSAFE NZ

Under HSWA, and the new Hazardous Substances Regulations, WorkSafe's focus is on the 'downstream' use, storage and handling of hazardous substances in workplaces. Under HSNO, WorkSafe will enforce the eco-toxic and disposal requirements in the workplace.

Whilst WorkSafe are the primary workplace health and safety regulator in New Zealand, the Police, Maritime New Zealand, the Civil Aviation Authority, and the NZ Transport Agency also play important roles in enforcing health and safety compliance.

WorkSafe works closely with employers (PCBUs) and employees (Workers). Its primary functions are to:

Engage:	Provide guidance, advice and information. Advise on effectiveness of health and safety legislation.
Educate:	Promote and support education and training.
Enforce:	Monitor and enforce compliance with health and safety legislation.

Working Safer presents an opportunity to take an effective, system-wide approach to workplace health and safety in New Zealand.

It will help foster a New Zealand culture that recognises that health and safety is not a burden but an investment in good business practice, improved productivity and reliability, and an engaged workforce.

Q Search

WORKSAFE
Māhi Haumanu Aotearoa


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Home / A - Z topics and industry / Hazardous substances

A - Z topics and industry

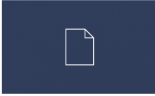
Hazardous substances

This section contains information about managing your hazardous substances safely, key regulations and how to become a certified handler. It also contains our practical guidance and statutory registers and records.

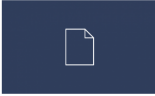


Managing your hazardous substances

Here are some key things you need



Hazardous Substances Regulations



Certification, authorisation, approvals and licensing

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SAFE WORK INSTRUMENTS

Safe Work Instruments (SWIs) are a type of subordinate instrument (sometimes called tertiary legislation). As a regulatory tool SWIs were introduced with the HSWA. They are developed by WorkSafe and approved by the Minister for Workplace Relations and Safety.

SWIs can be used for a range of purposes under HSWA, but only have legal effect if they are specifically referred to in Regulations. Under the Hazardous Substances Regulations, they will be used to:

- + Prescribe detailed or technical matters that change relatively frequently and will often be industry specific.
- + Set additional or modified workplace requirements for hazardous substances approved or reassessed by the Environmental Protection Authority (EPA)
- + Provide an alternative means of complying with a regulation or regulations.

Two types of SWIs relating to hazardous substances will be in place when the Hazardous Substances Regulations come into force in December 2017:

- + Those that replace HSNO Codes of Practice (these provide alternative compliance options). This will ensure that businesses now compliant with hazardous substance regulations under a HSNO Code of Practice will continue to be compliant under HSWA.
- + Those that continue some workplace controls set in individual substance approvals made by the EPA.

Examples of SWI will include:

- + Polyethylene above ground stationary tanks for diesel fuel
- + Filling of below ground petrol tanks by pumping
- + Markings for pipework connected to above ground stationary tanks.
- + Modified requirements for specified fumigants.

CERTIFIED HANDLERS

Certified handlers are people who are skilled and competent to handle very hazardous substances in the workplace. They must demonstrate competency in their particular area and must be certified by a Compliance Certifier.

When is a Certified Handler required?

A certified handler for the following substances:

- + Certain substances requiring a controlled substance licence, including certain explosives, vertebrate toxic agents (VTAs) and fumigants.
- + Acutely toxic substances that can be fatal (Acute toxicity: oral/ skin/ inhalation; Category 1 / 2)

Note: Under certain circumstances a person who is not a certified handler can handle these substances.



APPEDICES

APPENDIX A: CHEMICAL SPILL PROCEDURE

IN AN EMERGENCY, KEEP CALM, TAKE CONTROL, AND FOLLOW THESE STEPS

If you discover a chemical spill:

Ensure your own safety and the safety of others first.

1. Identify the chemical (if safe to do so) – check labels, signage, SDS.
2. Raise the alarm immediately by operating the nearest chemical alarm or by verbally reporting the incident.
3. Wear suitable PPE – check SDS for details.
4. Try to contain the spill/leak.
5. Shut off/isolate sources of harm where possible.
6. Close down any potentially dangerous processes or machinery that might provide a source of ignition (if safe to do so).
7. Evacuate the building/area (if safe to do so) and move up-wind of the affected area – note wind socks or other items that could indicate the wind direction.
8. Isolate the affected area (if safe to do so).
9. Inform management/supervisor (as soon as it is safe to do so).
10. Stay outside the building/affected area until the all clear has been given.

APPENDIX B: PPE SELECTION

LEVEL	PROTECTION PROVIDED	USED WHEN	LIMITATIONS
A	Highest available level of respiratory, skin and eye protection from solid, liquid and gaseous hazardous substances.	Hazardous substances have been identified and have high level of hazards to respiratory system, skin and eyes. Substances are present with known or suspected skin toxicity or carcinogenetic.	Protective clothing must resist permeation by the hazardous substance or mixtures present.
B	Same level of respiratory protection as Level A, but less skin protection. Liquid splash protection, but no protection against hazardous substance vapours or gases.	Hazardous substances have been identified but do not require a high level of skin protection. Initial site surveys are required until higher levels of hazard are identified. Primary hazards associated with site entry are from liquid and not vapour contact.	Protective clothing items must resist penetration by the hazardous substances or mixtures present.
C	Same level of skin protection as Level B, but a lower level of respiratory protection. Liquid splash protection, but no protection to hazardous substance vapours or gases.	Contact with the hazardous substance will not affect the skin. Air contaminants have been identified and concentrations measured. A canister is available which can remove the contaminant. The site and the hazards have been completely characterized.	Protective clothing items must resist penetration by the hazardous substance or mixtures present. Hazardous substance airborne concentrations must be less than IDLH levels. The atmosphere must contain at least 19.5% oxygen.
D	No respiratory protection, minimal skin protection.	Atmosphere contains no known hazard. Work functions preclude splashes, immersion, potential for inhalation or direct contact with hazard hazardous substance.	Should not be worn in the Hot Zone. Atmosphere must contain at least 19.5% oxygen.

LEVEL	REQUIREMENT	OPTIONAL
A	<ul style="list-style-type: none"> - Fully encapsulating suit, vapour protective / gas tight - Pressure demand full-face SCBA - Inner hazardous substance resistant gloves - Hazardous substance resistant safety boots - Two way radio communication 	<ul style="list-style-type: none"> Cooling system Outer gloves Hard hat
B	<ul style="list-style-type: none"> - Liquid splash-protective suit - Pressure demand full face piece SCBA - Inner hazardous substance resistant gloves - Hazardous substance resistant safety boots - Two way radio - Hard hat 	<ul style="list-style-type: none"> Cooling system Outer gloves
	<ul style="list-style-type: none"> - Support function protective garment - Full face piece air purifying canister equipped respirator - Hazardous substance resistant gloves - Hazardous substance resistant safety boots - Two way radio communications - Hard hat <p>NOT ACCEPTABLE FOR HAZARDOUS SUBSTANCE EMERGENCY RESPONSE</p>	<ul style="list-style-type: none"> Face shield Escape SCBA
D	<ul style="list-style-type: none"> - Coveralls - Safety boots / shoes - Safety glasses or hazardous substance splash goggles <p>NOT ACCEPTABLE FOR HAZARDOUS SUBSTANCE EMERGENCY RESPONSE</p>	<ul style="list-style-type: none"> Gloves Escape SCBA Face shield

APPENDIX C: HAZARDOUS SUBSTANCES REGISTER

1	2	3	4	5	6	7	8
Trade name or any other name or description you can give	CAS Number (helps with searching)	Maximum quantity available for use & type of storage	Substance Name (as given under HSNO)	Hazard classification (HSNO)	Location certificate needed?	Approved Handler needed?	Tracking needed?
Acetone	67-64-1	200L (in 5 x 20L tins),+ 1000L in above ground tank (1x)	2-Propanone	3.1B, 6.1E, 6.3B, 6.4A			
LPG	68476-85-7	Cylinder 1 x 45kg net, bottle 1 x 9 kg net	LPG	2.11A			

Prepared By:

Date Prepared:

Review Date:

As a minimum, complete column 1 and 3. For the quantity information in column 3, it is important to specify the size of packages or tanks. If you know the CAS number (often found in the SDS), enter that as well (column 2) as this helps if the information is incomplete. Column 3) can be coded e.g. P = packaged, UGT = underground tank, AGT = above ground tank, C = cylinders etc) Column 4 is the key column for identifying the substance. The first two lines show examples. Columns 6, 7 and 8 can be used to highlight if these trigger levels are reached or exceeded.

APPENDIX D: MOSHH ASSESSMENT

This appendix is included as an optional additional section to this course programme. The notes can be referred to or left for information at the discretion of the trainer or at the choice of the client.

PERFORMANCE OBJECTIVE:

By the end of this Section, you will be able to assess the risk of using different hazardous substances in terms of potential for harm.

PERFORMANCE IS SATISFACTORY WHEN YOU CAN:

- + List the hierarchy of controls.
- + Describe the basic steps in a risk assessment based on the MOSHH Assessment guidelines.
- + Estimate the level of risk is associated with the use of hazardous substances.

Evaluating Risk

- + Dealing with hazardous substances usually involves a level of uncertainty.
- + Most hazardous substances have a value for which persons should not be exposed to. **These are:**

WES- TWA: _____

WES- Ceiling: _____

GEL:

General Excursion Limit: _____

TEL- Tolerable Exposure Limit: _____

- + New Zealand Workplace Exposure Standards are used as a reference point.
- + Personal exposure should be maintained below the relevant levels expressed by the standards.
- + Compliance with the relevant standard does not preclude further efforts to reduce exposure further.
- + The question of “What is reasonably practicable?” is always specific to each individual situation.
- + The detail of the assessment required depends on the complexity of the situation and the degree of risk.

For example: an assessment to establish the risk associated with solvent exposure from items such as marking pens and correcting fluid in offices may take just a few minutes. At the other end of the spectrum, an assessment involving large quantities of hazardous substances at a manufacturing site may require a team approach involving several days work.

RISK CONTROL

In determining what measures are appropriate to ensure risk is controlled, each of the key elements listed below are required to be considered.

- + Control measures should be reviewed and improved, maintained, extended or replaced as necessary to ensure and maintain control.
- + Reviews should take place at regular intervals.

MOSHH ASSESSMENT

What does MOSHH stand for? _____

What is a MOSHH Assessment? _____

- + It is one approach to performing a systematic assessment of hazardous substances in the workplace.
- + It can be used as a checklist to ensure that the relevant tasks are completed.

COMPLETING AN ASSESSMENT OF HAZARDOUS SUBSTANCES

- 1) **Decide who** will carry out the assessment (this may require specialist or expert advice).
- 2) **Define the area to be assessed** (Use a "walk-through" survey).
- 3) **Identify substances hazardous to health** -Don't forget substances may change form due to or may result from a process even if they are not present at the beginning of the process e.g. Solvent vapours emitted due to the effects of heat on a bath of liquid or the production of a toxic gas from the effects of a liquid being through a flame or the products of combustion.

Obtain information on hazards to health - Obtain information on hazards to health (Use SDS's.)

- 4) **Consider who could be exposed and how.**

- 5) **Estimate the degree of exposure.** This may require use of specialised equipment and perhaps the services of specialist personnel.
- 6) **Draw conclusions and recommendations about the risk.**
- 7) **Record assessment and actions required for:**
 - a. Preventing or controlling exposure,
 - b. Monitoring controls and/or exposure,
 - c. Monitoring health, and
 - d. Reviewing training.

Important note: Don't forget to identify, consider, control and record other kinds of hazard that are not necessarily related to the hazardous substance's properties.

Implementation: Carry out actions identified above.

Review: To ensure the effectiveness of your hazard management.

Corrective Actions: Implement any actions that are identified as being necessary from the review process.

KEEP RECORDS:

Document all stages using corporate or suitable 'off the shelf' documentation packages. Share the information in accordance with Health and Safety and Environmental Legislative requirements. Use the findings and the documentary records to enhance information provisions and training of employees and contract personnel.

Insert Examples of MOSHH Assessment forms and other associated Hazardous Substance Management Systems documentation here. Where these are not available use the default documentation set.

Where are MOSHH Assessment records kept in your organisation and who is responsible for them?

COMPATIBILITY CHART

		DANGEROUS GOODS & COMBUSTIBLE LIQUIDS STORAGE COMPATIBILITY CHART										
Class or Subsidiary Risk	Class or Subsidiary Risk											
		SEGREGATE At least 3m	SEGREGATE At least 3m	OK TO STORE TOGETHER	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 3m
FLAMMABLE GASES		SEGREGATE At least 3m	SEGREGATE At least 3m	OK TO STORE TOGETHER	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 5m
NON TOXIC NON FLAMMABLE GASES		OK TO STORE TOGETHER	OK TO STORE TOGETHER	OK TO STORE TOGETHER	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 5m
TOXIC GAS		MAY NOT BE COMPATIBLE CHECK MSDS AND NOTES	MAY NOT BE COMPATIBLE CHECK MSDS AND NOTES	OK TO STORE TOGETHER	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 5m
OXIDIZING GAS		OK TO STORE TOGETHER	OK TO STORE TOGETHER	OK TO STORE TOGETHER	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 5m
FLAMMABLE LIQUIDS + COMBUSTIBLE LIQUIDS		SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 5m	OK TO STORE TOGETHER	SEGREGATE At least 3m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 5m
FLAMMABLE SOLID		SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 3m	MAY NOT BE COMPATIBLE CHECK MSDS AND NOTES
SPONTANEOUSLY COMBUSTIBLE		SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 3m	OK TO STORE TOGETHER	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 5m
DANGEROUS WHEN WET		SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 5m	OK TO STORE TOGETHER	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 5m
OXIDIZING AGENT		SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 3m	SEGREGATE At least 5m	SEGREGATE At least 3m	SEGREGATE At least 5m	SEGREGATE At least 5m	SEGREGATE At least 3m	MAY NOT BE COMPATIBLE CHECK MSDS AND NOTES	SEGREGATE At least 3m	SEGREGATE At least 3m
ORGANIC PEROXIDE		ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	SEGREGATE At least 3m

GLOSSARY OF TERMS

ACC

Accident Compensation Corporation.

Approved codes of practice

Developed by WorkSafe NZ and approved by government minister; sets out how to do certain things safely. Accepted in court as means of compliance in specific situations.

Event

An event is where the situation or thing gets out of control and people or other things are exposed to harm.

Good faith

A concept set out in the Employment Relations Act that describes positive ways of working and communicating between two groups e.g. workers and management.

Guidelines

Developed by WorkSafe NZ and/or Industry Body: sets out how to do certain things safely. Accepted in court as means of compliance in specific situations.

Harm

Death, injury and illness, including both physical and psychological harm.

Hazard

A situation or thing that has the potential to harm a person.

Hazards at work may include many things e.g. noisy machinery; a moving forklift; a toxic chemical; electricity; gravity; radiation; a repetitive job; an angry and abusive person, or an infectious disease.

Hazards are not risks, risk factors or absent or failed controls.

Incident

An unwanted event that caused or could have caused, harm, damage or loss of some kind.

Officer

Person with significant influence over the management of the business or undertaking, such as Director, Chief Executive and Partner.

PCBU

Person (legal entity) Conducting a Business or Undertaking.

PPE

Personal Protective Equipment.

Psychosocial

Relating to mental health in individuals and relationships between people.

Qualitative

Involving judgements, opinion and intuition.

Quantitative

Something that involves the measurement of quantity.

Reasonably practicable

Action which is, or was, at a particular time, reasonably able to be done in relation to ensuring health and safety, taking into account and weighing up all relevant matters, including likelihood of the risk occurring, degree of harm that might result, knowledge about the hazard or risk, and risk control measures, availability and suitability of risk control measures, and cost of risk control measures, including whether the cost is grossly disproportionate to the risk.

Regulations

Made under the Health and Safety at Work Act (specifically health and safety related regulations). Legally enforceable, with specific duties and duty holders.

Risk

The possibility that harm (death, injury or illness) might occur when exposed to a hazard, including an estimation of the likelihood of an event occurring where someone is exposed to a hazard, and the consequence(s) of exposure to the hazard.

Risk Controls

Risk controls are the resources put in place to manage a risk. They can be many things. For example: physical barriers, technology, work methods, information, and protective equipment and clothing.

Risk Factors

A risk factor is something that affects the likelihood of harm, and/or the severity of consequences. Examples can be distraction, fatigue, bad weather, poor visibility, inappropriate equipment, time pressure, lack of information, and how much energy (speed, mass, height and so on).

Wellbeing

Wellbeing is a broader and more holistic concept, encompassing not only physical health but also mental, emotional, and social health, and overall life satisfaction and fulfilment. Wellbeing recognises that happiness and contentment result from a balance across various aspects of life, extending beyond physical fitness.

Wellness

Wellness primarily focuses on physical health and fitness, emphasising activities and practices related to achieving and maintaining good physical health.

USEFUL WEBSITES

NEW ZEALAND GOVERNMENT

www.worksafe.govt.nz	WorkSafe NZ
www.standards.govt.nz	Standards New Zealand
www.acc.co.nz	Accident Compensation Corporation
www.fireandemergency.nz	Fire and Emergency New Zealand
www.police.govt.nz	New Zealand Police
www.legislation.govt.nz	New Zealand Legislation
www.getthru.govt.nz	Get Thru Emergency Management
www.civildefence.govt.nz	Ministry of Civil Defence
www.eqc.govt.nz	Earthquake Commission

PRIVATE ORGANISATIONS

www.impac.co.nz	IMPAC Services Ltd
www.safeguard.co.nz	Safeguard Magazine

TRADE UNIONS

www.union.org.nz	New Zealand Council of Trade Unions
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KEY POINT

For more useful websites and resources we recommend you login to IMPAC's student portal.



+IMPAC | The Health + Safety Company