Ministry of Commerce, Industry and Labour
Matagaluega o Pisinisi, Alamanuia ma Leipa

OCCUPATIONAL SAFETY AND HEALTH

Guide

"Managing Hazardous Substances in the Workplace"

Australian AID

ACKNOWLEDGEMENT

In the ongoing efforts of the Government of Samoa through the Ministry of Commerce Industry and Labour *('MCIL')* and the Samoa National Occupational Safety and Health Taskforce *('NOSH'*) to raise the profile of Occupational Safety and Health *('OSH')* nationally, this Guideline was develop to support the business community in particularly employers and employees in complying with requirements of OSH Legislation.

In that regard, MCIL would like to recognise and acknowledge the financial support of the Government of Australia through the Samoa Governance Support Program who have made this project becomes a reality.

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Government Representatives;

- Accident Compensation Corporation,
- Samoa Airport Authority,
- Samoa Fire and Emergency Services Authority,
- Ministry of Works, Transport and Infrastructure,
- Samoa Water Authority,
- Scientific Research Organisation of Samoa
- Ministry of Agriculture and Fisheries
- Ministry of Natural Resources and Environment

Private Sector Representatives:

- Coolma Samoa Limited
- Samoa Breweries Limited
- Samoa Pacific Liquor
- Southpac Cleaning
- Clean 4 All
- Digicel Samoa Limited
- Samoa Red Cross Society

NGO Representative;

- International Labour Organisation

This Guide was developed using guidance from both the Australian Model Code of Practice for Managing Hazardous Substances and the New Zealand Hazardous Substances Compliance Code contextualise to the Samoa content.

Disclaimer:

- *MCIL has made every effort to ensure that the information in this Guide is reliable but makes no guarantee as to its completeness.*
- *Note this guide may be changed at any time without notice.*

Table of Contents

Key Definitions

Best Practice Approach refers to suggested actions which currently go beyond specific legal obligations pursuant to the Occupational Health and Safety Act, 2002 and the Occupational Health and Safety Regulations, 2017.

Commissioner means the Commissioner of Labour, or a person lawfully acting in the role of the Commissioner

Dangerous Goods: Dangerous goods are substances that are corrosive, flammable, combustible, explosive, oxidising or water-reactive or have other hazardous properties. Dangerous goods can cause explosions or fires, serious injury, death and large-scale damage.

A dangerous good may also be a hazardous substance.

Duty holder: A person, either an individual and includes a body of persons corporate or non-corporate who holds a legal obligation under the Occupational Health and Safety Act, 2002 and the Occupational Health and Safety Regulations, 2017.

Exposure standard: A workplace exposure standard for a particular chemical sets out the legal concentration limit of that chemical that must not be exceeded. Workplace exposure standards are not intended to represent acceptable exposure levels for workers. They are simply the maximum upper limit prescribed by legislation. Exposure standards are found in Safety Data Sheets.

GHS: The Globally Harmonized System of Classification and Labelling of Chemicals, 7th edition, published by the United Nations.

GHS compliant: A label or safety data sheet that meets the specifications of the Globally Harmonized System.

Hazardous substances: A substance, mixture or article that satisfies the criteria for a hazard class in the GHS 7, as modified by the Commissioner's proclamation pursuant to Regulation 64 (2), to exclude: a substance, mixture or article that satisfies the criteria solely **for one of the following hazard classes**:

acute toxicity—oral—category 5
acute toxicity—dermal—category 5
acute toxicity—inhalation—category 5
skin corrosion/irritation—category 3
aspiration hazard—category 2
acute hazard to the aquatic environment—category 1, 2 or 3
chronic hazard to the aquatic environment—category 1, 2, 3 or 4

Hazardous waste: is generated from many sources including industry, laboratories, hospitals and even office settings, it is a material, substance or by-product that is no longer useful or required. Inappropriate disposal of hazardous waste may have harmful effects on human health or the environment. Hazardous waste includes toxic, poisonous, explosive, corrosive, flammable, ecotoxic, infectious and radioactive wastes. (Waitangi Convention 2001).

A manifest: is a written summary of hazardous chemicals with physical and acute toxicity hazards that are used, handled or stored at a workplace. A manifest **is only required where the quantities of those hazardous chemicals exceed the threshold amounts**. Threshold amounts are determined by emergency services.

Reasonably practicable: A requirement upon duty holders to do what they are reasonably able to do. It requires the duty holder to decide if it is REASONABLE in the circumstances to do ALL that is possible or, given the circumstances, is it REASONABLE to do LESS than all that is possible based on consideration of these circumstances

(a) the likelihood of the hazard or the risk concerned occurring

(b) the degree of harm that might result from the hazard or the risk

(c) what the person concerned knows, or ought reasonably to know, about the hazard or risk, and ways of eliminating or minimising the risk

(d) the availability and suitability of ways to eliminate or minimise the risk, and

(e) after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk.

For example: a low level of risk will likely mean that the duty holder can, objectively, decide to do LESS that all that is possible.

A hazardous substance register is a list of all hazardous chemicals stored, handled or used at a workplace.

Safety Data Sheet (SDS): Information provided by the manufacturer of a hazardous substance that provides details of hazardous substances including important information about the nature of the risk, storage recommendations, and suitable risk controls for usage, storage and clean up.

Transition Period: A specified period during which duty holders are given time to ensure compliance with the GHS 7 surrounding the labelling of hazardous substance containers and SDS. During the transition period duty holders may use other suitable labels for containers and non GHS compliant SDS (provided the SDS is no more than 5 years old). The end of the transitional period for duty holders to adopt the GHS 7 system for classifying and providing GHS 7 compliant labelling and SDS is **1st January 2022**

SCOPE

This guide is intended for duty holders under the Occupational Safety and Health Act, 2002 (the OSH Act) and Occupational Safety and Health Regulations, 2017 (the OSH Regulations) and provides guidance on what is required to comply with their duties under this legislation.

In addition, this guide provides supplemental information for a '**best practice approach**'* for the management of risks associated with hazardous substances used, handled or stored in Samoan workplaces. Although the best practice approach **may go beyond a strictly legal obligations**, duty holders are encouraged to work towards best practice. It is anticipated that future regulatory changes to Samoan OSH law will reflect aspects of 'best practice approach' found in this guide.

A key duty holder is the employer. However, the law provides that designers, manufacturers, and suppliers of hazardous substances in Samoa also have legal obligations. The prime focus on this guide is to assist employers to manage hazardous substances in the workplace, so far as is reasonably practicable. In addition, sections, 1.2, 2.2, 2.3 and 2.6 outline the legal obligations and best practice approach for manufacturers, suppliers and importers regarding labelling and provided safety data sheets.

AIM

To identify which are **current legal obligations**, compared to those which are **suggested best practice**, the following symbols are used.

*Denoted with the symbol:

current mandatory legal obligations, duty holder must ensure they comply

recommended best practice approach, a recommended approach

Exclusions

This Guide in no way reduces obligations imposed by other Samoan legislation regarding hazardous substances or dangerous goods.

1.0 Introduction

This guide provides information on how to ensure compliance with the current Samoan law regarding:

- Managing risks created by **hazardous substances** in the workplace.

This guide focuses on the **employer's duty** to ensure employees and the workplace are free, **so far as is reasonably practicable**, from risks to safety and health associated with hazardous substances.

This guide also includes the **duties of designers, manufacturers and suppliers** regarding hazardous substances.

Prior to detailing the hazard management process for eliminating or reducing the risk of hazardous substances at work the guide provides key requirements regarding labelling containers and providing safety data sheets. The guide introduces the GHS system of classification in terms of classification of hazardous substances.

For a checklist for basic management and legal compliance for hazardous substances, refer to the checklist in ***Appendix 1***.

1.1 What kind of risks do hazardous substances pose in the workplace?

Common risks caused by hazardous substances in the workplace include both safety and health hazards:

Health hazards, which cause adverse health effects include:

- **Acute (short term, immediate effects**) headaches, nausea or vomiting and skin/eye/ respiratory system corrosion- irritation or burns
- **Chronic health (long term effects)** asthma, dermatitis, nerve damage or cancer e.g. toxic chemicals (poisons), carcinogens (cancer-causing chemicals) and reproductive toxins (chemicals which may cause infertility or birth defects).

Exposure usually occurs through inhalation, skin/eye contact or ingestion either during handling/usage or in situations of spillage/accidental release.

Physical hazards, these hazardous either alone or when stored or used in (reactive) combination with other substances or in certain conditions may cause severe damage to people and property which include:

- flammable,
- corrosive,
- explosive,
- chemically-reactive and,
- oxidising chemicals.

Exposure usually occurs through inappropriate handling/usage, storage or situations of spillage/accidental release.

Many chemicals have properties that make them both health and physical hazards.

1.2 Who has general safety and health obligations to employees and workplaces? Employers and Designers, Manufactures and Suppliers.

Under both the OSH Act 2002 and OSH Regulations 2017 employers, as well as designers, manufacturers and suppliers have legal obligations surrounding the management of hazardous substances.

OSH Act Part 3 General Duties of Care, Section 11

General duty of <u>employers</u> to employees:
An employer must take all <u>reasonably practicable steps</u> to protect the safety, health and welfare, at work of employees and to provide and maintain a safe and healthy work environment including;

- **substances,**
- **systems of work, and,**
- **any building or public or private area in which work takes place.**

Current law requires the employer to take 'reasonably practicable' steps to protect the safety, health and welfare of employees, in the context of hazardous substances the employer's decision on what is 'reasonably practicable' is discussed in detail in, section 5.0 hazard control.

OSH Act 2002, Section 19

Duty of <u>designers, manufacturers and suppliers</u>:
A person who designs, manufacturers or supplies any article, or substance or machinery for use at a place of work, shall:

a) **ensure so far as is reasonable that the article, substance or machinery is so designed and constructed and manufactured as to be safe and without risk to health and safety when it is used properly and under relevant information or advice relating to its use which has been provided by the designer, manufacture or supplier**
b) **take any steps as are necessary to ensure the provision of adequate information in the English and Samoan language to purchasers and users about the use of which the article, substance or machinery has been designed and about any requirements necessary to ensure that it will be safe and without risk to health and safety when properly used**

Current law requires designers, manufacturers or suppliers, in the context of hazardous substances, to ensure 'so far as is reasonable' that the substance is safe when properly used and to provide adequate safety information about the substance such as use/storage.

A key aspect of managing risks posed by hazardous substances is identifying the hazards by reviewing the **labelling information supplied** so informed decisions can be made.

1.3 The globally harmonised system (GHS)

The GHS is the international system to provide consistent criteria for **classification, labelling** and provision of **safety data sheets (SDS)**. By means of this guideline the *Globally Harmonised System of Classification of Chemicals 7*th revised edition is used throughout, with some exclusions contingent in the context of Samoa.

2.0 Labelling and Safety Data Sheet Obligations

2.1. Labelling obligations- Employers

OSH Regulations Part 11 Regulation 64 (1) Hazardous substances

Employer's specific duties regarding Hazardous Substances:
Employers must protect the health and safety of persons from hazards arising from hazardous substances by:

(a) ensuring the hazardous substance used at work are provided with labels and appropriate information sheets and

(b) Ensuring that employees who could be exposed to hazardous substance used at work are provided with information and training on the nature of hazards and on the means of assessing and controlling exposure to such substances, and that employee representatives in the workplace have access to this information

A label provides **safety information** for the user. Current law requires employers to ensure the labelling of all hazardous substances in the workplace, including original containers, pipes, tanks and containers into which substances are poured/decanted as well as waste containers should all be labelled.

2.2 Labelling obligations-Designers, Manufacturers and Suppliers

OSH Act 2002, Section 19

Duty of designers, manufacturers and suppliers:
A person who designs, manufacturers or supplies any article, or substance or machinery for use at a place of work, shall:

c) ensure so far as is reasonable that the article, substance or machinery is so designed and constructed and manufacturer as to be safe and without risk to health and safety when it is used properly and under relevant information or advice relating to its use which has been provided by the designer, manufacture or supplier

d) take any steps as are necessary to ensure the provision of adequate information in the English and Samoan language to purchasers and users about the use of which the article, substance or machinery has been designed and about any requirements necessary to ensure that it will be safe and without risk to health and safety when properly used

Current law requires designers, manufacturers and suppliers to take necessary steps to ensure provision of adequate information to purchasers or users, it is reasonable to expect that those who supply hazardous substance ensure the **container is labelled with safety information**.

2.3 Transition period for GHS compliant labelling on hazardous substance containers- Employers, Designers, Manufacturers and Suppliers.

GHS compliant labels must include specific details, described in **Figure 1** below. Duty holders are **encouraged** to adopt, best practice, that is, GHS compliant labelling now.

As the current law requires 'labelling' but does not refer to GHS compliant labelling a transition period will be in place so that duty holders have the time to ensure that GHS compliant labelling can be secured. After the end of the transition period, 1 January 2022 duty holders will be expected to have GHS compliant labels on all hazardous substance containers (subject to labelling exemptions listed in 2.4.)

A hazardous substance label is GHS **compliant** if it includes:

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

The key feature of a GHS compliant label in **Figure 1** that includes easy to understand alerts about the hazards.

Figure 1

Label element	Examples
Signal words These provide an immediate warning to the reader	Danger if severe or Warning less severe
Hazard statements These describe the nature and severity of the chemical hazard based on a chemical's classification	– May cause cancer – Fatal if inhaled – Flammable liquid and vapour – Causes severe skin burns and eye damage – May cause respiratory irritation

Label element	Examples
Pictograms These provide a pictorial representation of the type of hazard that can be easily recognised at a glance (not aquatic toxicity this is an environmental hazard not covered under OSH law)	 • Carcinogen • Mutagenicity • Reproductive toxicity • Respiratory sensitizer • Target organ toxicity • Aspiration toxicity  • Flammable • Pyrophoric's • Self-Heating • Emits flammable gas • Self-Reactive • Organic Peroxide  • Irritant to skin and eyes • Skin sensitizer • Acute toxicity • Narcotic effects • Respiratory tract irritant • Hazardous to ozone layer  • Gases under pressure  • Skin corrosion or burns • Eye damage • Corrosive to metals  • Explosive • Self-reactive • Organic peroxide  • Oxidizer  • Aquatic Toxicity  • Acute toxicity

2.4 GHS Labelling exemptions

Some hazardous substance containers do not require GHS labelling e.g.:

- consumer product labels for household use,
- therapeutic goods (medicines)
- some agricultural and veterinary chemical products,
- if the container is too small (in which case reduced labelling requirements apply)
- when hazardous substances, which are also dangerous goods, are labelled to meet transport requirements.

2.5 Incorrectly labelled or unlabelled containers

Employer Obligation

If an employer finds a container that does not have a label or is incorrectly labelled action must be taken. If the substance is unknown the words *'Caution—do not use: unknown substance'* should be used and the container isolated until it can be disposed of in a suitable manner.

Designers, manufacturers and suppliers Obligation

Designers, manufacturers and suppliers should ensure that any hazardous substance which is designed, manufactured or supplied is **labelled with sufficient information to alert the user to the hazards.** *It is noted that the 'pictograms' and signal words 'warning' or 'danger' should alert the employer (and the user) to the risks posed by the hazardous substance*.

2.6 Safety Data Sheets (SDS) Obligations-Employers, Designers, Manufacturers, Suppliers

Safety Data Sheets (SDS) Obligations-Employer

OSH Regulations Part 11 Regulation 64 (1) Hazardous substances

Employer's specific duties regarding Hazardous Substances:

Employers must protect the health and safety of persons from hazards arising from hazardous substances by:

(a) ensuring the hazardous substance used at work are provided with labels and appropriate information sheets…

(d) ensuring the emergency service have access to relevant information on hazardous substances in the workplace

(e) ensuring that relevant information is available to employees

Current law requires employers to ensure (safety data sheets) SDS be made available for all hazardous substances used, handled or stored, both for employees, their representatives as well as emergency services.

Safety Data Sheets (SDS) Obligations-Designers, Manufacturers, Suppliers

Occupational safety and health Act 2002, Section 19

Duty of designers, manufacturers and suppliers:
A person who designs, manufacturers or supplies any article, or substance or machinery for use at a place of work, shall:

e) ensure so far as is reasonable that the article, substance or machinery is so designed and constructed and manufacturer as to be safe and without risk to health and safety when it is used properly and under relevant information or advice relating to its use which has been provided by the designer, manufacture or supplier

f) take any steps as are necessary to ensure the provision of adequate information in the English and Samoan language to purchasers and users about the use of which the article, substance or machinery has been designed and about any requirements necessary to ensure that it will be safe and without risk to health and safety when properly used

Current law requires designers, manufacturers and suppliers to ensure that hazard substances are provided with adequate information this includes an SDS for hazardous chemicals. *Suppliers will need to determine the most suitable method of ensuring that an SDS is provided to the purchaser. This may include a paper copy upon supply or a link to an electronic copy of the SDS.*

2.6.1 Safety Data sheets

Current law requires employers to refer to Safety Data Sheets (SDS) to identify, assess and manage hazardous substances at the workplace, e.g. an SDS includes information on:

- the chemical's identity and ingredients

- health and physical hazards
- safe handling and storage procedures e.g. PPE
- emergency procedures, e.g. firefighting, first aid, spillage, and
- disposal consideration

As the current law requires 'SDS information' but does not require GHS compliant SDS a transition period will be in place so that duty holders have the time to ensure that GHS compliant SDS can be secured. After the end of the transition period, 1 January 2022, duty holders will be expected to have GHS compliant SDS available for all hazardous substances at the workplace.

If the SDS for a hazardous substance is not supplied, the employer has a duty to contact either the manufacturer, importer or supplier to obtain the SDS.

2.6.2 Contents of a GHS compliant Data Sheet

Key feature of a GHS compliant SDS is that includes standardised information about the hazards both regarding the HEALTH impact of the hazardous substance and the SAFETY impact.

- Section 1: Identification: Product identifier and chemical identity e.g. Manufacturers details, recommended use etc;
- Section 2: Hazard(s) identification, GHS classification, e.g. corrosive to metal category 1, skin corrosion/irritation, Category IB, Hazard Statement: Causes severe skin burns and eye damage;
- Section 3: Composition and information on ingredients;
- Section 4: First aid measures;
- Section 5: Firefighting measures;
- Section 6: Accidental release measures;
- Section 7: Handling and storage, including how the chemical may be safely used;
- Section 8: Exposure controls and personal protection;
- Section 9: Physical and chemical properties;
- Section 10: Stability and reactivity;
- Section 11: Toxicological information;
- Section 12: Ecological information;
- Section 13: Disposal considerations;
- Section 14: Transport information;
- Section 15: Regulatory information;
- Section 16: Any other relevant information

Figure 2 below shows examples of hazard information found in a GHS Compliant SDS.

Hazard classification	The SDS will state the form of the hazard for example 'may cause cancer' or 'flammable liquid', skin corrosion etc
The route of entry	Routes of entry can include inhalation (breathing it in), skin contact, ingestion (swallowing it), eye contact, and injection through high pressure equipment.
Advice or warnings for at-risk workers	The SDS may also include toxicological data, or advice or warnings for people that might be at risk, such as: – people who are sensitised to chemicals – warnings for pregnant women – people with existing medical conditions such as asthma.
Instructions on storage	The SDS may include advice on certain materials that are incompatible when storing the chemical, or advice on potential hazardous degradation products. Examples include—storage of acids and bases; storage of ether for extended periods to avoid formation of explosive peroxides
Physical properties	Physical properties can have a significant effect on the hazard. Some key properties to note include: – physical state: is it solid, liquid or gas? • if solid—what is the potential for dust explosion? • if liquid—is it mobile/viscous/volatile/miscible? • if gas (and vapours)—is it lighter/heavier than air? – flashpoint, fire point and explosive limits – viscosity – density – particle size – vapour pressure – solubility and pH – reactivity – boiling and/or freezing point or range – electrical and/or heat conductivity – the nature and concentration of combustion products.
Situations that may generate hazardous chemicals	Examples may include: – use of welding rods which may liberate hazardous fumes and vapours – directions for use of chlorine bleach, warning that harmful levels of chlorine gas may be generated if the substance is mixed with incompatible chemicals – warnings that some metals, including alkali metals, in contact with water or acids, liberate flammable gas – information on by-products or breakdown products like formation of explosive peroxides in ether.

2.6.3 SDS for hazardous ordinary domestic chemical

Some workplaces only use chemicals for ordinary 'domestic use' e.g. dishwasher descaler etc.

If a domestic chemical is used **differently to normal household use**, the employer should obtain the SDS in order to determine the level of risk to workers and manage with appropriate controls.

2.7 Hazardous substances Register

A **Register** of hazardous substances is a list (inventory) of the product names of all hazardous substances used, handled or stored at the workplace, accompanied by the current SDS for each hazardous substance listed. It can be in paper or electronic form (e.g. there are companies that offer an electronic service). **Example refer to *Appendix 2.***

A Register ensures:

- quick access to information about hazardous substances at the workplace including controls
- legal obligations are met, to make them available to workers and their representatives
- tells emergency workers and others (e.g. safety inspectors) what hazardous substances are on site.

A Register must:

- Include the product name, maximum amount of hazardous substance stored, include SDS
- be regularly reviewed to ensure all SDS are current, within the last 5 years.
- be updated as new hazardous substance is or when use of a hazardous substance is discontinued.

Note that the hazard register may also be in a propriety electronic form, for example 'chemwatch Gold FFX and other services enable larger employees to be the repository for their register and SDS's. GoldFFX is a web-based Safety Data Sheet (SDS) database and chemical management system supplied by the Chemwatch Company. It is a chemical management software for accessing Safety Data Sheets (SDS) and maintaining chemical store manifests.

2.8 Providing Emergency Services with information

OSH Regulations Part 11 Regulation 64 (1) Hazardous substances

Employer's Specific Duties regarding Hazardous Substances:
Employers must protect the health and safety of persons from hazards arising from hazardous substances by:

(d) ensuring the emergency service have access to relevant information on hazardous substances in the workplace

Current law requires employers to provide emergency services access to relevant information on hazardous substances in the workplace.

Unlike a Register a '**manifest'** is required when large quantities of hazardous substances are stored at a workplace which, should an accidental release occur, ignition or potential explosion or other event emergency services are able to determine any special

requirements for dealing with the emergency. Threshold amounts is determine by emergency services.

An example of manifest is included in ***Appendix 4.***

2.9 Disposal of hazardous waste

Section 13 of the SDS provides information regarding disposal of hazardous substances that become hazardous waste.

3.0 Step One of the Hazard Management Process -Identify Hazards

The hazard management process is a five step approach to managing risk in the workplace for legal compliance. Figure 3, below outlines the steps for legal compliance, namely:

- identify which workers are at **risk of exposure to hazardous substances**
- determine what **tasks, situations and sequence of events** that could cause harm
- evaluate the hazards, **assess** the risk
- identify and decide what kind of **control measures** should be implemented,
- implement
- record, monitor and review to **check the effectiveness** of existing control measures

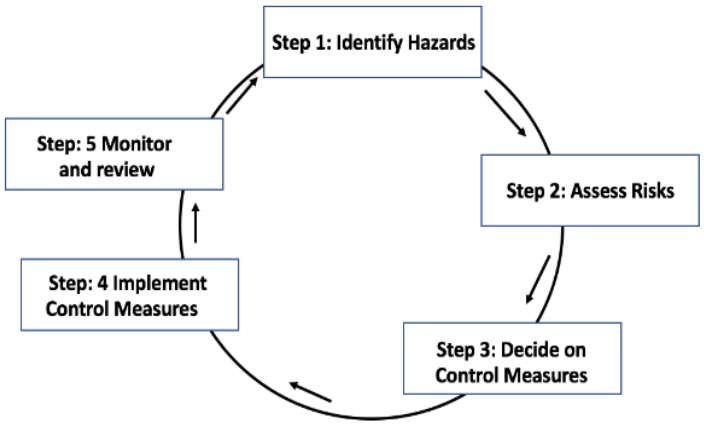


Figure 3: Hazard management process steps
Note that penalties may apply if this process is not undertaken.

OSH Act Part 3 General Duties of Care, Section 11

General duty of employers to employees:
An employer must take all reasonably practicable steps to protect the safety, health and welfare, at work of employees and to provide and maintain a safe and healthy work environment including;

substances,
systems of work,
and any building or public or private area in which work takes place.

OSH Act Part 3 General Duties of Care, Section 12

(1) An employer must establish and maintain effective methods for:

a) systematically identifying existing and potential hazards to employees:
b) systematically identifying at the earliest practicable time, new hazards to employees,

c) regularly assessing the extent to which a hazard poses a risk to employees

(2) The methods may include but not necessarily be limited to self-inspection and hazard identification process approved by the Commissioner and notified or published in the Savali, and shall be carried out in cooperation with workplace representatives and Committees

OSH Regulations Part 11 Regulation 3 Hazards and Risk Assessments

(3) Hazard identification and risk assessment

1. **An employer must ensure that appropriate steps are taken to identify all reasonably foreseeable hazards arising from work which may affect the health or safety of employees or other persons in the workplace**
2. **If a hazard is identified under subregulation (1), an employer must ensure that an assessment is made of the risk associated with the hazard**
3. **In carrying out an assessment under subregulation (2) an employer must, as far as reasonably practicable, determine a method of assessment that adequately addresses the hazard identified, including one or more of the following:**
    - **a) a visual inspection**
    - **b) auditing**
    - **c) testing**
    - **d) technical or scientific evaluation**
    - **e) an analysis of injury or near miss data**
    - **f) discussions with designers, manufacturers, suppliers, employees or other relevant parties**
    - **g) a quantitative analysis**

(4) Without limiting sub regulations (1) and (2) the identification of hazards and the assessment of associated risks must be undertaken:

before the introduction of any plant or substance;

or

before the introduction of a work practice or procedure; or

before changing the workplace, a work or work practice, or an activity or process, where to do so may give risk to a risk to health or safety.

An employer who contravenes this regulation commits an offence and is liable on conviction:

(a) For a corporation, to a fine not exceeding 1000 penalty units; and
(b) For any other case, 100 penalty units.

OSH Regulations Part 11 Regulation 64 (1) Hazardous substances

Employer's specific duties regarding Hazardous Substances:
Employers must protect the health and safety of persons from hazards arising from hazardous substances by:

(c) providing for the assessment of the risk of, and the control of, exposure to hazardous substances

Current law, for hazardous substances, requires employers to have a PLAN to identify hazards, regularly assess risks and *taking all reasonably practicable steps* to protect the health and safety of persons by controlling exposure to hazardous substances.

A similar requirement exists for Designers, Manufacturers and Suppliers. The focus of this guide, however, is on the employer's legal obligations in workplaces.

It is also a legal requirement that the inspection and risk assessment process should be carried out with the co-operation of workplace safety and health representatives and committees.

Even if a workplace does not have safety and health representatives or committees it is good practice to involve employees when identifying and assessing hazards.

3.1 Typical hazards arising from hazardous substances

Hazards arising from hazardous substances in the work place comprise two broad types of hazards:

- *Health hazards*- cause adverse health effects.
  Exposure usually occurs through inhalation (airborne concentrations e.g. dusts, mists, fumes), skin/eye contact splashes or poor hand hygiene
- *Physical hazards*- cause injury to people or damage to property, physical hazards include flammable, corrosive, explosive, chemically-reactive and oxidising chemicals.

The chemical and physical properties of the substance Gases or liquids with low boiling points or high vapour pressures can give rise to high airborne concentrations, whereas high boiling point liquids such as oils are only likely to create a hazardous airborne concentration if they are heated or sprayed. Chemicals with a very low or high pH (for instance, strong acids and caustics respectively) are corrosive to the skin and eyes.

3.2 Methods for identifying hazards caused by hazardous substances in the workplace

a) Review of label and SDS, advice about types of harm can be included in section 2 'the hazard statement' and precautionary statement of the hazardous substance SDS
b) Consulting with workers and their representatives
c) Observing how hazardous substances are used, stored, handled electrical equipment used
d) Seeking advice and assistance from a competent person
e) Regular inspection of the worksite regarding storage
f) Further, following the manufacturer's instructions found in the SDS regarding usage, handling, storage, disposal
g) Reviewing incident reports

4.0 Step Two of the Hazard Management Process- Assess the risk

Assess risks —understand the nature of the harm that could be caused by the hazard, how serious the harm (consequence) could be and the likelihood of it happening to prioritise required action.

A risk assessment can help determine:

- the severity of a hazardous substance risk
- whether existing control measures are effective and based on the SDS information

- what action you should take to (further) control the risk caused by the hazardous substance
- how urgently the action needs to be taken

A risk assessment should also consider foreseeable failures of plant and equipment, or control measures, caused by unexpected occurrences or rare events which could impact on the release of hazardous substances, for example:

- A power failure may impact on the operation of a **mechanical ventilation system** at the workplace.
- Accidental spills have the potential to corrode or impact on nearby plant or equipment.
- Extreme changes in temperature might weaken containers, make a chemical more volatile


Planning a risk assessment

Dividing up the workplace—If a workplace is really large use floor plans, or buildings or rooms to break up the task.
Grouping similar work—consider 'similarly exposed groups', if the same workers are doing the same thing focus on one.
Grouping similar chemicals—If the work involves a large number of different hazardous substances, they may be grouped on the basis of their form, properties and the way they are used or handled. This kind of grouping may be appropriate for example, where:

- a range of solvent-based paints containing a number of different solvents and additives are used in the same or similar way (for example, sprayed, brushed or applied with a roller)
- solvent-based liquid pesticides are used in the same or similar way (for example, decanted, mixed or sprayed).


Sourcing other information— The law requires employers to keep a record of accident/incident in the workplace. These can be reviewed to see if the hazardous substance has been involved in any incidents or accidents.

A basic assessment action consists of:

- **Reviewing the labels and the SDS** of the hazardous chemicals and assessing the risks involved in their use,
- **Examining work practices and conditions, consult with employees**—
- It is important to observe and consult with employees because they might not adhere strictly to standard operating procedures for certain task, is the PPE being used effectively?
- **Consult** those doing the work if they have experienced symptoms listed on the SDS. This information will help you to determine if exposure has been significant.
- **Consider also changes to 'normal work'** during cleaning, maintenance, breakdowns and during staff absences or shortages.

 It is a legal requirement that the inspection and risk assessment process should be carried out with the co-operation of workplace safety and health representatives and committees.

Considering what is the potential impact of the hazard? The consequences:

- How severe could the consequence of exposure be? For example, direct contact with a corrosive substance causing burns to skin and eyes, fire or explosion causing serious burns or death, exposure to carcinogens
- How many people are exposed to the hazard?

Determine who could be exposed, and when this could occur, the likelihood:
Workers can come in contact with a hazardous substance and any waste, intermediate or product generated from the use of the substance if they:

- work with it directly
- are in the vicinity of where it is used or likely to be generated
- enter an enclosed space where it might be present
- disturb deposits of the substance on surfaces (for example, during cleaning) and make them airborne, and/or
- come into contact with contaminated surfaces.

An employer should consider all people at the workplace, as well as those within a radius that could be harmed, including those who may not be directly involved in using, handling, storing or generating a hazardous substance, such as:

- ancillary or support/services workers (be aware that cleaners, maintenance and laboratory staff)
- contractors
- visitors, and,
- supervisors and managers.

Consider:

- How specific tasks or processes are actually carried out in the workplace (for example, decanting, spraying, heating). By observing and consulting employees or workers you can find out if they are not adhering strictly to standard procedures or if procedures are not adequately providing protection to workers
- The quantity being used. Use of larger quantities could result in greater potential for exposure
- The risk controls in place and their effectiveness. For example, a ventilation system may be in use but when poorly designed, installed or maintained it may not achieve the correct level of protection (such as if filters are not regularly cleaned)
- whether each worker's work technique has a significant bearing on their level of exposure—poor techniques can lead to greater exposure, and
- workers who may be working alone with hazardous substances and if any additional precautions or checks may be necessary in case they become incapacitated.

How likely is the hazard to cause harm, how often is exposure likely to occur and for how long?

The total dose (amount) of a hazardous substance a worker is likely to receive increases with an increase in the duration or frequency of exposure. Estimations of the duration and frequency of exposure can be based on observation, knowledge and experience of the work.

Seek information from your workers and their health and safety representatives to find out:

- Which work activities involve routine and frequent exposure to hazardous chemicals (for example, daily exposure, including during end-of-shift cleaning) and who are the people performing these activities?
- What happens when non-routine work, production of one-off items or isolated batches, trials, maintenance or repair operations are performed?
- What happens when there are changes to work practices in events such as cleaning, breakdowns, changes in volume of production, adverse weather conditions?
- Are there differences between workers within a group? Anyone whose work habits or personal hygiene (for example, washing before eating, drinking or smoking) are significantly different should be considered separately.

Other factors that may affect consequence and likelihood include:

- the conditions under which the hazardous substance is used, for example ventilation in confined spaces, extreme temperatures
- work practices and procedures, for example isolation, to carry out maintenance
- the capability, skill and experience of relevant workers

Some hazardous substances in the work place may require a complex assessment

When the label and/or SDS indicates that a hazardous substances poses a significant risk to health for very high risk hazardous substances such as carcinogens, mutagens, reproductive toxicants or sensitisation agents a more complex risk assessment may be required.

In order to complete a more complex assessment, further information may be sought and decisions taken to:

- eliminate the uncertainty of any risks
- select appropriate control measures
- ensure that control measures are properly used and maintained, and
- determine if air monitoring or health monitoring are required.

It may be necessary to engage external professional assistance to undertake a more detailed assessment.

Employers should Contact MCIL/OSH Unit on Telephone: (685) 20441/20442/20882, Facsimile: (685) 20443. P.O. Box 862, Apia, Samoa. Level 4 ACC House, Apia. Email: mpal@mcil.gov.ws

4.1 Estimating the level of exposure to hazardous substances

Once an assessor has investigated the hazardous substances, the following information should then be used to estimate the level of exposure:

- the quantities used
- the frequency and duration of exposure
- the effectiveness of the controls already in place, and
- whether workers are working directly with the substance

Occupational safety and health Act 2002, Section 23

Part IV Specific Duties of care-Measures to minimise accidents and injuries:

Without limiting the duties Under Part 3, all employers and employees must take measures and adopt work practices which will eliminate, isolate or minimise the incidence of accidents and injuries which might derive from:

(g) dust, gas, liquid, mist, vapours or other substances liable to give risk to explosion or to explode on ignition or to seriously impair the quality of the air available to an employee;

Occupational safety and health Act 2002, Section 24

Part IV Specific Duties of care-Measures to protect health

Without limiting section 23, all employers and employees shall take measures to adopt work practices which will eliminate, isolate or minimise risks to the health and safety of employees by ensuring the following:

(b) each place of work is ventilated to provide an adequate supply of fresh air, to carry off and render harmless all steam, fumes, dust, smoke and other impurities;
(g) there is provision, in cases where an employee's clothing is likely to become contaminated while at work, of facilities or arrangements by which contaminated clothing can be laundered before being removed from the place of work by the employee;
(l) effective arrangements are taken to eliminate, isolate, minimise the harmful and potentially harmful effects to employees of any chemicals, corrosives, contaminants, atmospheric pollutants, or other substances which are either stored or used in the workplace;
(m) there is provision and maintenance of suitable and effective fire-fighting equipment to standards approved by law, with fire exists, clearly marked and employees fully aware of emergency evacuation procedure
(n) there is provision and maintenance of suitable and adequate supplies of first aid facilities, appliances and requisites, and the availability at all times of persons who have Red Cross approved or equivalent qualifications in the application basic first aid

OSH Regulations Part 2 Regulation 4 Hazards and Risk Assessments

Monitoring of substance exposure and health of employees:
(1) Where health assessment risk indicates exposure or likely exposure of employees to any substances regulated under these Regulations, the employer must:
a) monitor the exposure of the substance; and
b) monitor the health of his or her employee; and
c) carry out a health surveillance programme, and
d) keep information and records relating to the health and safety of his or her employees
(2) The employer must notify the employees of the results of the monitoring process under sub regulation (1)
(3) The employer may terminate the monitoring process if results indicate that the exposure has been adequately controlled and no longer poses healthy risks.

OSH Regulations Part 11 Regulation 64 Hazardous Substances

64(3) If an assessment under sub regulation 64(1)c shows that the monitoring of exposure is required to ensure the maintenance of adequate control of exposure to employees to hazardous substances, the employer must ensure that the exposure of employees to the hazardous substance is monitored pursuant to a method of monitoring and analysis approved by the Commissioner

4) If an assessment of risk to health indicates that monitoring the health of the employee is required or the monitoring is required to ensure the maintenance of adequate control of the exposure of employees to hazardous substances to health, the employer must:

a) monitor the health of the health of the employer; and
b) keep any information or record related to the health and safety of the employee; and
c) provide to the employee the results of that employee's health monitoring

In some cases there may be a requirement, **as required by the SDS,** for **atmospheric monitoring** by the employer, to ensure that the rate of exposure (the 'exposure standard') to the hazardous substances is not exceeded. Employers may be able to determine some exposures by:

- **Observation**—For example, look for evidence of fine deposits on people and surfaces, or the presence of dusts, mists or fumes visible in the air (for example, in light beams), or the presence of odours.
- Hazardous substance that present a significant hazard may require air monitoring to determine the level of exposure.

Specialist help may be needed where air monitoring is required and an exposure limit is in place.

Current law requires the Commissioner to approve the method of monitoring. Should an employer assess that monitoring of the environment is necessary they should contact IREPOSH to discuss requirements for monitoring or health surveillance.
Employers should also aware that they continue to have an obligation to report any accident relating to hazardous substances at the workplace that causes death or serious illness or injury to an employee, in accordance with Section 21 of the Act.
Advice about exposure controls for monitoring will be included in section 2 and 8 of the hazardous substance SDS.

Record keeping

Although the current law is silent on the length of time records should be kept based on the ILO standard best practice is 5 years, or, if they relate to identifiable employees, 30 years.

Fire and explosion, hazardous atmospheres

Consider health and safety risks associated with a hazardous atmosphere or an ignition source in a hazardous atmosphere at the workplace. Detection equipment may be needed.

Identifying ignition sources

Ignition sources can be any energy source that has the potential to ignite a fuel. They can be categorised into three broad types: flames, sparks and heat. Some common examples of ignition sources are provided in figure 3.

Figure 3: Common examples of ignition sources

Type of ignition source	Examples
Flames	– Welding flames, gas heaters, pilot lights
Sparks	– Welding arcs, starters for fluorescent lighting, electric motors, electrical equipment like power points, cigarette lighters, switches and telephones – Static electricity including from friction sources – Lightning – Electrical equipment – Friction from drilling, grinding, scraping of metal on concrete
Heat	– Hot surfaces including light bulbs, ovens, radiators or heaters, flue pipes, vehicle engines and exhaust systems, pumps and generators – Exothermic chemical reactions (those which generate heat) – Poor ventilation

5.0 Step 3 of the Hazard Management Process Determine Suitable Controls

After the risk has been assessed a decision needs to be made about what controls should be put in place based on 'what is reasonably practicable'.

OSH Act Part 3 General Duties of Care, Section 11

General duty of employers to employees:
An employer must take *all reasonably practicable steps to* protect the safety, health and welfare, at work of employees and to provide and maintain a safe and healthy work environment including;

substances,

systems of work,

and,

any building or public or private area in which work takes place.

OSH Act Part 3 General Duties of Care, section 13

Management of identified risks:

(1) An employer must take appropriate steps to control hazards which are identified and assessed as posing a threat to the safety, health or welfare of employees, and where practical the hazard must be eliminated.

(2) If elimination is impracticable then steps must be taken to isolate hazards from employees

(3) If elimination or isolation is impracticable, then employers must take steps:

- **a) To minimise the likelihood that the hazard will be a cause or source of harm to the employees; and**
- **b) To ensure that protective clothing and gear is provided, such as meets the standards outlined in this Act, including Codes of Practice and regulations issued by this Act; and**
- **c) To monitor the exposure of employees to the hazard; and**
- **d) To monitor with the employees informed consent, the health of employees in relation to exposure of the hazard.**

(4) The steps taken under this section include action to protect the environment, and persons in the environment from emissions, leakage or spillage from any machine process or substance used or stored in the course of the employer's business or operations

Control of risk:

(1) An employer must on the basis of a risk assessment under regulation (3) ensure that any risk to health and safety arising out of work are eliminated or if that is not reasonably practical minimised.

(2) An employer must, in the implementation of sub regulation (1) ensure that the minimisation of any risk is achieved by the application of the following hierarchy of control measures

- **a) Firstly, the application, so far as is reasonably practicable, of engineering controls, including substitution, isolation, modifications to design, guarding and mechanical ventilation**
- **b) Secondly, if steps taken under paragraph (a) do not minimise the risk, the application, so far as is reasonably practical of administrative control. Including safe work practices**
- **c) Thirdly if steps taken under paragraph (a) and (b) do not minimise the risk, the provision of appropriate protective equipment,**

(3) An employer who contravenes this regulation commits an offence and is liable on conviction:

(a) for a corporation, to a fine not exceeding 1000 penalty units: and

(b) for any other case, to a fine not exceeding 100 penalty units.

The employer must decide what controls are suitable. Note that although the final decision is with the employer employees and their representatives best practice suggests employees should be consulted prior to final decision making.

5.1 Reasonably practicable and the hierarchy of control

Current law requires the employer to take 'reasonably practicable' steps to protect the safety, health and welfare of employees and the work environment. The employer's decision on what is 'reasonably practical'. It requires the duty holder to decide is it REASONABLE in the circumstances to do ALL that is possible or given the circumstances is it REASONABLE to do LESS based on consideration of:

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

The employer must decide what controls are suitable. Note that although the final decision is with the employer employees and their representatives best practice suggests employees should be consulted prior to final decision making.

The law requires elimination where practicable and where elimination is not practicable a 'sliding scale' of controls and combination of controls should be used based on what is reasonably practicable. It is a hierarchy because the further from elimination the less effective the controls.

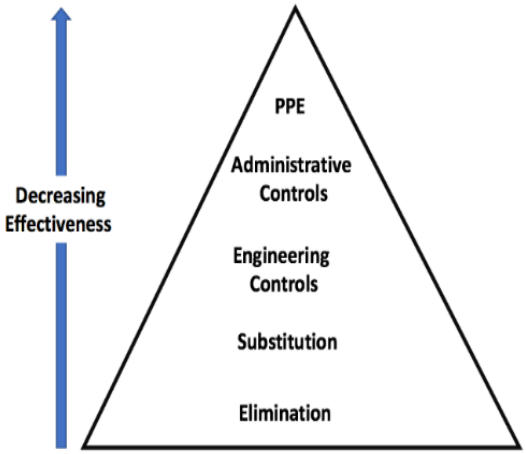
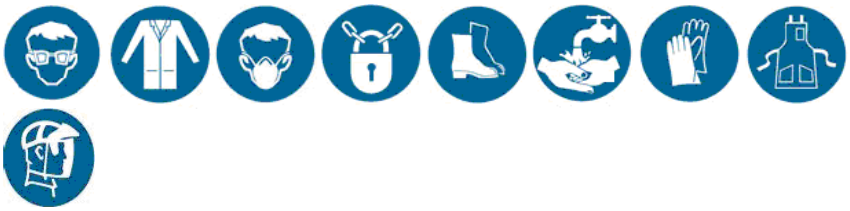


Figure 4, Hierarchy of control

Employers must control hazards based on the hierarchy of control:

- First consider, based on the risk assessment, if it is necessary to eliminate risks so far as is reasonably practicable;
- Review the SDS and decide on control measures and implement—if it is not reasonably practicable to eliminate the risk, implement the most effective control measures that are reasonably practicable in the circumstances in accordance with the hierarchy of control measures and ensure a plan is in place to review control measures to ensure they are working as planned and not introducing new hazards.

Figure 5: Control examples- Hazardous Substances

Control	Examples-Hazardous substances
Personal Protective Equipment (PPE) **LEAST EFFECTIVE**	Use of protective equipment such as gloves, protective clothing, face masks etc. All of which are not failsafe in protecting the employee PPE will likely be used in combination with other controls.  PPE is anything used or worn by a person to minimise risk to the person's health and safety. PPE includes overalls, aprons, footwear, gloves, chemical resistant glasses, face shields, respirators and air-supplied respiratory equipment. If PPE is to be used at the workplace, the employer must ensure that the equipment is: – selected to minimise risk to health and safety, including by ensuring that the equipment is suitable for the nature of the work and any hazard associated with the work and is of suitable size and fit and reasonably comfortable for the worker who is to use or wear it – maintained, repaired and replaced so that is continues to minimise risk to the worker who uses it, including by ensuring that the equipment is clean and hygienic, and in good working order. If the employer directs the carrying out of work, they must provide the worker with information, training and instruction in the proper use and wearing of PPE, and the storage and maintenance of PPE. In most circumstances, PPE should not be relied as a control measure. It should be used only as a last resort when all other reasonably practicable control measures have been used and the risk has not been eliminated, or as interim protection until higher level controls are implemented. For some high risk activities, such as spray-painting, abrasive blasting and some emergency response actions, PPE should always be used to supplement higher level control measures. The effectiveness of PPE relies heavily on workers following instructions and procedures correctly, as well as fit, maintenance, and cleaning. Workers might avoid using PPE if it must be used for long periods, if dexterity and clear vision are needed for the task, or if they have not been adequately trained on how to fit and use it properly. PPE must be suitable for the task being performed. Examples include: – Choosing appropriate chemical-resistant gloves, offering the best resistance to the chemical being used. Some gloves may be resistant to some solvents but not to others. – Using a full-face, air-fed respirator rather than a half-face respirator during spray-painting operations to reduce exposure to hazardous chemicals like isocyanates, which can cause skin and respiratory allergic reactions.
Administrative Control	**written rules and policies, including safe operating procedures** for using, handling or storing hazardous substances—for example, having a written clean-up procedure for spills

	a job rotation schedule—so that the same workers are not continually exposed to chemicals with chronic health effects **a purchasing policy**—this may include just-in-time ordering so that large quantities of chemical do not need to be stored on site, or preferential purchasing of premixed chemicals so that workers do not need to manually mix hazardous chemicals **restricted area policies—**so that only staff who are involved in the use, handling, storage or generation of hazardous chemicals are allowed access to high risk areas where there may be a greater risk of exposure **implementing procedures to prevent introduction of ignition sources** in hazardous areas **using a work method that minimises the time that mixers, reactors or ovens are open to the environment** (both during and after use)—this limits the period of time in which a hazardous substance could escape into the work area **having a cleaning schedule** for work areas and a maintenance schedule for engineered controls **requiring staff to use vacuuming or wet sweeping** methods to suppress dust that may be generated during dry sweeping **prohibiting eating, drinking and smoking** in areas where hazardous substances are used, stored or handled, and **providing washing facilities for rinsing off** (such as hand washing, showers, laundering of clothes). **Emergency eyewash/shower facilities** **Monitoring workplace/Health Surveillance** **Training and supervision** should always be provided to ensure administrative controls are implemented effectively. Administrative controls should only be considered when other higher order control measures are not practicable, and to supplement other control measures.
Engineering Control Isolation	Mechanical ventilation, spray booths.
Substitution	Replace a hazardous, toxic chemical with a less hazardous and less toxic chemical. Replacing an organic solvent in a degreasing process with a water-soluble solvent such as a solution of sodium hydroxide. Organic solvent gives off vapours that can affect the nervous system, however sodium hydroxide solutions can cause skin damage but are less dangerous than organic solvents
Elimination **MOST EFFECTIVE** **Doing 'all that is reasonably practicable'**	Where possible, remove the hazardous substance Where possible, this is the ideal control, a decision of whether elimination is necessary will depend on answering the question of 'what is reasonably practicable' in the circumstances. The most effective control measure is to remove the hazard or hazardous work practice. By designing-in or designing-out certain features, hazards may be eliminated.

OSH Act Part 3 General Duties of Care, section 15

Protective Clothing and Equipment PPE
An employer shall:

a) **provide, maintain and make accessible to employees the protective clothing and equipment necessary to avoid injury and damage to their health; and**
b) **take all reasonably practical steps to ensure that the employees use that protective clothing and equipment whenever the circumstances for which it is provided arise; and**
c) **make provision in the place of work, for protective clothing and equipment so provided to be cleaned and securely stored without risk of damage when not required.**

Current law requires employers to provide appropriate PPE to the employee, however this should be the 'last' resort or included with other controls.

6.0 Steps 4 and 5 of the Hazard Management Process Implement and monitor and review

Once risk control measures are decided upon based on step 3, action must be taken to implement the control measure. It is important that there is assign person from the organisation/business that is responsible for the implementation of the measure within a reasonable timeframe.

Arrangements are needed to monitor the effectiveness of the control measures and this can be done through;

- Regular workplace inspections
- review of workplace accidents data
- Regular auditing processes

Control measures need regular review to ensure that they are reducing the level of risk to a suitable level as well as not introducing new hazards.

PART TWO- SPECIFIC GUIDANCE and CONTROLS for HAZARDOUS SUBSTANCES

In addition to information about labelling and safety data sheets and the 5 steps of the hazard management process which has been provided in this guide, are a variety of specific legal obligations regarding hazardous substances. These are detailed below.

The following sections provide information about employer's SPECIFIC legal obligations regarding hazardous substances in the workplace.

7.0 Storage of Hazardous substances

7.1 Employers obligation regarding storage of hazardous substances or other goods

Occupational safety and health Act 2002, Section 23

Part IV Specific Duties of care-Measures to minimise accidents and injuries:

Without limiting the duties Under Part 3, all employers and employees must take measures and adopt work practices which will eliminate, isolate or minimise the incidence of accidents and injuries which might derive from:

(c) Storage, stacking or securing any material which is or is likely to be corrosive, irritant, toxic, explosive or otherwise capable of endangering safety or health;

(g) dust, gas, liquid, mist, vapours or other substances liable to give risk to explosion or to explode on ignition or to seriously impair the quality of the air available to an employee;

Current law requires employers to eliminate or minimise risks of hazardous substances.

Advice about storage is in **section 7 of the hazardous substance SDS**. Consider should include:

Storing incompatible substances together, consider chlorine, acetone, caustic soda, nitric acid, hydrogen peroxide, oxygen and other gases under pressure

- Storing flammables near ignition sources or in high temperatures
- Leakage protection (bunding)
- Extreme temperatures, not or cold could change a containers strength
- Suitable locations, away from exposure to damage
- Locked where appropriate, available to authorised persons only
- Type of container, strength, size
- Warning signage
- Available of spillage and clean up kits
- Fire suppression and emergency equipment

8.0 Usage and Handling: Providing information, training, instruction and supervision

8.1 Employers Obligation, information, training, instruction and supervision

Current law requires employers to ensure employees are given information, instruction and training to make sure they have the knowledge and experience to use, handle, and store hazardous substances safely, or they need to be supervised by someone who has this knowledge.

OSH Act Part 3 General Duties of Care, Section 11

General duty of employers to employees:
An employer must take all reasonably practicable steps to protect the safety, health and welfare, at work of employees and to provide and maintain a safe and healthy work environment including;

substances,

systems of work,

and,

any building or public or private area in which work takes place.

OSH Act Part 3 General Duties of Care, section 14

(1) An employer must take all reasonably practical steps to provider his or her employees, in appropriate languages, the information, instruction, training and supervision necessary to protect each employee's health and to deal with emergencies that might reasonably be expected to arise in the course of that work.

8.2 Development of safe operating procedures

Advice about **handling and usage will be included in section 7 of the hazardous substance SDS**.

A safe operating procedure is a system of work that is written down and used to provide workers with the information and instruction they need to do the job safely. Depending on the level of risk, the employer may need to develop **safe operating procedures,** so far as reasonably practicable, when hazardous substances are used or handled at a workplace. **Appendix 3** provides a sample template for the documentation of safe operating procedures.

Safe operating procedures should be developed in consultation with and made known to employees. Depending on the level of risk and the complexity of the task safe operating procedures may need to be incorporated as signage in the workplace.

Information, training and instruction should include the following:

- the nature of the hazardous chemicals involved and the risks to the worker
- the control measures implemented, how to use and maintain them correctly,
- emergency arrangements, including evacuation procedures, containing and cleaning up spills and first aid instructions
- the selection, use, maintenance and storage of any PPE required to control risks and the limitations of the PPE
- the proper use, wearing, storage and maintenance of PPE
- undertaking work in confined spaces
- storage and handling systems for hazardous substances.

8.3 Training and training records

Current law requires employers to provide employees with information, instruction, training and supervision. Although the legislation is silent on keeping records employers will need to keep evidence of employee training including who was trained, on what date (s) and the content of that training (e.g. safe operating procedures).

8.4 Supervision

Depending on the level of risk, or lack of employee competency, some activities involving hazardous substances may require supervision of workers.

9.0 Emergency Preparedness

OSH Act Part 3 General Duties of Care, section 14

(1) An employer must take all reasonably practical steps to provider his or her employees, in appropriate languages, the information, instruction, training and supervision necessary to protect each employee's health and to deal with emergencies that might reasonably be expected to arise in the course of that work.

9.1 Emergency Response Plan

Current law requires employers to have an **emergency response plan.** This is a written document that lists what will be done in an emergency involving hazardous substances and who is responsible for each task.

Emergency response plans should consider examples of what incidents might occur:

- What will be done if an employee is exposed to hazardous substances?
- What if a fire starts near flammable substances?
- What if a spillage occurs?

Current law requires employers to provide emergency services with access to relevant information in the workplace. Employers should provide the following details to emergency services in the form of a manifest, ***Appendix 4***.

Workplaces that use, store or handle large quantities of hazardous substances, providing a copy of emergency plans and details of actions to be taken in the event of an alarm or emergency situation to neighbouring sites may assist in coordinating responses in the event of an emergency.

9.2 Content of emergency plan

The emergency plan includes procedures for:

- how to raise the alarm, including how to contact the appropriate emergency services organisation
- any actions to be taken by workers in an emergency to ensure the safety and health of all persons at the workplace to minimise risks, damage to property as well as the environment, and
- any actions to be taken by prescribed persons such as fire wardens, for example how to evacuate the workplace or use fire extinguishers, provision of first aid
- communication procedures between the person coordinating the emergency response and all persons at the workplace.
- the testing procedures and how often they will be done

- how relevant workers will be provided with information, training and instruction about implementing the emergency procedures.

A comprehensive emergency plan should also include:

- a site map that indicates where hazardous substances are stored
- responsibilities of key persons in managing emergencies
- circumstances to activate the plan
- suitable equipment and systems for raising the alarm and communicating
- estimating the extent of the emergency
- alerting emergency services organisations to the emergency or if it has the potential to become a dangerous occurrence
- procedures that account for all people at the workplace
- isolation of the emergency area to prevent entry by non-essential personnel
- roles of on-site emergency response teams (including First Aid Officers, Emergency Wardens)
- containment of any spillage
- the requirement for firefighting water retention to ensure that contaminated firefighting water cannot enter waterways, drains or groundwater
- disconnection of power supplies and other energy sources except when required to maintain safety of a critical operation or to run emergency equipment such as fire booster pumps
- prevention of hazardous substances or contaminated material of any kind from entering drains or waterways
- provision of relevant information and assistance to the emergency services authority, both in anticipation of emergencies and when they occur
- maintenance of site security throughout the emergency
- provision for dealing with the public and the press, and
- site rehabilitation requirements.

9.3 Consultation and communication

The emergency plan must be developed in consultation with employees, the primary emergency services organisation and neighbouring premises. The emergency services organisation should also be consulted when developing and designing fire protection systems used in the workplace.

9.4 Reviewing the emergency plan

The emergency plan should be reviewed:

- within five years of its development
- in intervals of no more than five years
- if there is a change of risk at or in the proximity of the workplace
- when updated information becomes available, or
- if a possible deficiency is identified, for example through regular testing.

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

9. 5 Emergency equipment and safety equipment

The type of emergency equipment required to respond to an emergency, contain and clean up spills and assist employees in conducting emergency procedures safely will vary depending on the type and quantities of hazardous substances at the workplace.

Equipment must be located so it is readily accessible for all employees if an emergency arises. If safety equipment is needed to respond to an emergency, you must ensure that it is provided, maintained and readily accessible at the workplace. Safety equipment for use with hazardous substances should be compatible with the hazardous substances they may come in contact with. For example, water fire extinguishers must not be used on oil fires.

Examples of emergency equipment that may be required in hazardous substance workplace emergency:

- over packs such as oversized drums for containing leaking containers
- absorbent material suitable for the hazardous substance likely to be spilled
- booms, plates and/or flexible sheeting for preventing spillage from entering drains and waterways
- fire extinguishers
- neutralising agents such as lime and soda ash
- suitable pumps and hoses for removing spilled material
- first aid kits (including antidotes for specific hazardous substance exposures such as cyanide)
- emergency showers and eye wash stations
- hand tools such as mops, buckets, squeegees and bins, and
- suitable protective clothing and equipment to protect the safety and health of personnel involved in the clean-up.

Ministry of Commerce, Industry and Labour
Matagaluega o Pisinisi, Alamanuia ma Leipa

Preliminary checklist for 'basic' compliance- this is a guide only		Comment
Are *all* containers with hazardous substances labelled? **Pipework?** **Waste containers?** **When decanted?** **(Guide section 2.0-2.5)**	**Yes** **No** ☐ ☐	
Is the label sufficiently detailed so that those who work with them can recognise the risk? **Is it a GHS compliant label?*** **(note not a requirement during transition period)** **(Guide section 2.0-2.5)**	**Yes** **No** ☐ ☐ **Yes** **No** ☐ ☐	
Do you have the safety data sheet (SDS) for each hazardous substance onsite? **Is it available to employees and their representatives?** **Do you have a register of all hazadous subtances on site?** **All data sheets within 5 years of date?** **Are the data sheets GHS compliant?*** **(note not a requirement during tranistion period)**	**Yes** **No** ☐ ☐ Yes No ☐ ☐ Yes No ☐ ☐ Yes No ☐ ☐ **Yes** **No** ☐ ☐	

Australian AID

(Guide section 2.6-2.7)		
Have you advised Emergency Services if you have large quantities of hazardous substances on site? **(Guide section 2.8)**	**Yes** **No** ☐ ☐	
Is there a plan to identify all hazards associated with hazardous substances? **(Guide 3.0-3.2)** **Have workers been consulted?** **(Guide 3.0-3.2)**	**Yes** **No** ☐ ☐ Yes No ☐ ☐	
Have risk assessments been done, based on the information in the SDS for each hazardous substance? **(Guide 4.0-4.2)**	**Yes** **No** ☐ ☐	
Are controls in place 'so far as reasonably practicable' and based on the hiearchy of control? **(Guide 5.0-5.1)** **Have controls been reviewed?** **(Guide 6.0)**	**Yes** **No** ☐ ☐ **Yes** **No** ☐ ☐	
Are hazardous substances stored safely and according to the SDS recommendations? (Guide 7.0)	**Yes** **No** ☐ ☐	
Are hazardous substances handled according to the SDS? **Have safe operating procedures been developed?** **Is there a procedure for accidents/spills?** **(Guide 8.0-8.3)**	**Yes** **No** ☐ ☐ Yes No ☐ ☐ Yes No ☐ ☐	
Have employee's been trained in safe operating procedures? Is there evidence of training?	**Yes** **No** ☐ ☐	

(Guide 8.0-8.3)	Yes No ☐ ☐	
Is first aid available if someone is exposed? **Eye baths? Showers?**	**Yes No** ☐ ☐	
Are fire fighting measures available? **(Guide 9.0-9.5)**	**Yes No** ☐ ☐	
Are emergency procedures prepared? **Have emergency procedures been tested?** **(Guide 9.0-9.5)**	**Yes No** ☐ ☐ Yes No ☐ ☐	

Appendix 2: Sample of Hazardous Substances Register

Document Hazardous chemical register template (from Safe Work Australia 2019)
https://www.safeworkaustralia.gov.au/doc/hazardous-chemical-register-template

Hazardous Substance Register Template

A hazardous substance register includes:

- all hazardous substances stored, handled or used at a workplace.
- safety data sheets of the hazardous substance must be included with the register.

The register must be readily accessible to all workers, and their representatives involved in the use, storage and handling of the hazardous substances at the workplace.

A hazardous substance register does not need to include:

- in-transit hazardous substances,
- consumer products.
- non-hazardous substances

The chemical names are mandatory.

The other information presented in the template is mandatory. You may also amend the register template to include additional information, such as:

- dates arrived on worksite,
- any codes or numbers used to identify chemicals at your workplace,
- information about the chemicals' hazard of the chemicals (such as GHS and Dangerous Goods Classes)
- the intended use of the hazardous substance at the workplace.

Hazardous Chemical Register				
Company		Date last reviewed:		
Worksite:		Contact person:		
Name of Chemical	Issue date of SDS (SDS has an expiry date of 5 years)	Quantity	Location	Comments
Example: Ethanol	19/02/2019	10L	Flammable liquid cabinet, Storage Room 1	Solvent for paints

Appendix 3: Sample for Safe Operating Procedure

SAFE OPERATING PROCEDURE [NAME OF CHEMICAL/ ACTIVITY]		
SOP No:	**Version No:**	**Review date:**

Chemical Work Process ☐ **Hazardous Chemical** ☐ **Hazardous Chemical Class** ☐

[General advisory statement]

DESCRIPTION OF WORK PROCESS, CHEMICAL OR HAZARD CLASS:

POTENTIAL HAZARDS:	•	•	•

PERSONAL PROTECTIVE EQUIPMENT

	Eye protection as identified in SDS must be worn at all times		Appropriate footwear with substantial uppers must be worn		Protective gloves as identified in Safety Data Sheet
	Protective clothing must be worn		Protective clothing must be worn		Protective clothing must be worn
	Respiratory protection as identified in SDS must be worn		Maintain personal hygiene throughout work processes		Face shield must be worn
	Ear protection must be worn		Hearing and eye protection must be worn		Mandatory requirements are specified and must be followed. Report any accidents.
	Store in a secure location/ keep locked up		Keep aisle and work area clean		All cylinders must be secured with a chain
	A welding mask is required for this process		Switch power off after use		Use machinery guards

PRE-OPERATIONAL SAFETY CHECKS/ SPECIAL HANDLING AND STORAGE REQUIREMENTS

•

OPERATIONAL SAFETY CHECKS (Control measures in place)

Ensure ALL hazards are controlled at all times through good work practice

•

STEP BY STEP WORK PROCEDURE

•

WASTE DISPOSAL:

EMEREGENCY RESPONSE- First aid:

Emergency safety equipment:

Spill kit and spill response:

Clean up/ decontamination:	
Fire control:	
Person(s) completing the SOP:	**Role/Position(s):**

Instructions for developing a SAFETY OPERATING PROCEDURE (chemicals)

A **safety operating procedure** (SOP) is a written procedure explaining how to safely work with chemicals. A SOP helps to ensure a safe work environment by documenting the key risks associated with an activity and how the risks can be controlled.

There are three ways that you can use this SOP template for your activity:

1. For a **Chemical Work Process:** (spraying, dilution, mixing, storage, distillation etc.)
2. For a **Hazardous Chemical**: (ethanol, pool chlorine, hydrochloric acid etc.)
3. For a **Hazardous Chemical Class**: (a group of compatible flammables, corrosives, oxidizers etc.)

A SOP can link your safety operating procedure to a companion CHEMICAL RISK ASSESSMENT to show all your risk mitigation processes.

Filling in the SOP template

Chemical activity: Modify the title box at the top of your SOP so that it clearly identifies the type of activity you are undertaking. Fill in the SOP number (a number that has meaning for your workplace), version number and review date to allow for effective tracking, reviewing and archiving of your documents.

Activity type: identify the type of activity the SOP is being used for by checking the box (double click on the box and select "checked" in the dialogue box) for either a:

- **Chemical Work Process** – Briefly describe the process which involves hazardous chemicals. List all chemicals used in the process.
- **Hazardous Chemical** – List the hazardous chemical for which the SOP is being developed. Include the CAS or UN number (this helps with accurate chemical identification) and product name used for the chemical.
- **Hazardous Chemical Class** - Describe the hazards associated with a particular group of similar chemicals and list the chemicals used in the work space. List all chemicals used in the process.

Complete a **general advisory statement** in the green box that identifies the main hazards associated with the activity and describes the safest way to undertake the activity. For example, an advisory statement for preparing a dilution of acid could be written as *"When diluting liquid acids for use as laboratory agents, special precautions must be taken as concentrated acids are corrosive and cause serious burns".*

Description of work process, chemical or hazard class: describe the process used in the activity. You may find it helpful to outline the process in a step-by-step list.

- For specific chemicals, include **concentrations** and the **volume** required.
- Describe the approximate **frequency and duration** of use, and **location** of use.
- Insert a copy of your specific procedures for working with this particular chemical work process, hazardous chemical or hazard class if they are listed elsewhere (e.g. on the chemical label, in a reference manual).

Potential Hazards: List the potential hazards for each chemical work process, hazardous chemical, or hazardous class that you have identified.

- Include physical and health hazards such as fire, explosion, exposure hazards (burns to the skin, toxic fume generation and absorption through the skin).
- Refer to the chemical SDS or the chemical label, instruction manuals and other reference material.
- Be sure to include any hazards that may be associated with the work environment and equipment used to undertake the task.

Personal Protective Equipment (PPE): Eye, skin and body protection is important to protect against chemical exposure. You can use the chemical's safety data sheet, label and/or manufacturer's instructions to identify the required level of PPE and hygiene practices needed for your activity.

A selection of PPE pictograms and directives is provided in a table for your use. It is by no means comprehensive. Relevant additional information should be sought from other sources if required. Simply delete or add any protective equipment pictograms and modify any written descriptions listed in the safety data sheet or on the label that may be required to undertake the activity safely.

Pre-operational safety checks/ special handling and storage requirements: Provide details on any actions that need to be implemented before starting the activity. These may include, but are not limited to:

- specified SDS requirements
- setting out equipment required to safely complete the task
- checking for adjacent hazards in the workplace
- ensuring personnel are familiar with safety procedures
- compliance (e.g. ACDC compliance for herbicides)

List any handling and storage requirements for the hazardous chemicals involved in the SOP, including:

- specific handling instructions
- storage areas
- storage according to compatibility and policies regarding access to chemicals
- special procedures such as dating chemicals upon receipt, and expiry dates should be listed
- Also, indicate the location of other pertinent safety information, i.e. SDS, risk assessments, equipment manuals, chemical references etc.

Operational safety checks (controls in place): List any safety checks or control measures that need to be used during the work process (e.g., replace lids on chemicals immediately after use, clean up spills immediately, change gloves if chemical contact occurs). Describe engineering controls that will be used to prevent or reduce exposure to hazardous chemicals for the chemical work process, hazardous chemical or hazard chemical class. This includes ventilation devices such as fume hoods, safety screens etc.

Step by step procedure: List the steps (i.e. instructions) that will be followed to complete the activity.

Waste disposal: List which materials or substances will require disposal as hazardous waste and indicate how they are to be disposed of.

Emergency response:

- Detail specific **first aid** responses (eyes, skin, inhalation, ingestion) from SDS and identify the location of first aid kits and trained first aid personnel.
- List the location of appropriate **emergency equipment** (spill kits, showers, eye washes and fire equipment). Any special requirements for personnel exposure should also be identified in this section. Identify the location of emergency response phone numbers.

- Detail the nearest **spill kit** location and describe any specific requirements (e.g. neutralising agents, special absorbents or disposal methods). Refer to any **spill response** and emergency guidelines in use in the workplace. Indicate how spills or accidental releases will be handled and by whom.
- Detail any **clean-up/decontamination** actions. If items such as glove boxes, equipment, work surfaces and controlled areas have been contaminated by hazardous chemicals, remove chemical contaminants with appropriate solvents or cleaning solutions.
- List the **fire/explosion responses** for the chemical as described in the SDS.

Person(s) completing the SOP/signature(s): The author(s) of the SOP print their name(s) and sign the document. The SOP should be reviewed annually or sooner if an incident occurs or changes are made.

Save the SOP with other electronic chemical risk management materials or print and use with other safety information in your work area.

Your Safe operating procedure can be used as a 'work procedure' or as a training tool.

Appendix 4: Sample of a Manifest

A manifest provides information on hazardous chemicals for use by emergency services. A manifest must be prepared for a workplace which stores hazardous chemicals above the manifest quantities listed by emergency services.

This example is provided to help businesses develop manifests that meet the requirements. The layout used here is not mandatory but shows the information to be included. The amount of information required will depend on the size and complexity of the workplace.

***Note**: if you store manifest quantities of hazardous chemicals at your workplace, you must notify MCIL and Emergency Services and supply a copy of the manifest for your workplace. You must also provide a copy of your emergency plan to Emergency Services).*

Note that there may be other requirements from other Ministries such as Quarantine, MNRE etc.

EXAMPLE OF A MANIFEST

Workplace information	
Business name	XYZ CHEMICAL COMPANY PTY LTD
Trading name (if different)	XYZ CHEMICALS
Address of the workplace	1234 ABC Street, Apia
Date this manifest was prepared	1st January 2019

EMERGENCY CONTACTS

Both business hours and after hours telephone numbers for at least 2 persons who may be contacted if there is a notifiable incident at the workplace.

Name	Position	Telephone
L Dodgson	Production Supervisor	B/H: 12 345 678 A/H: 91 011 121
R Swanson	Director	B/H: 31 415 161 A/H: 71 819 202

HAZARDOUS CHEMICALS STORED IN BULK

This should include chemicals not stored in a container, for example a stockpile.

Area	Hazardous chemicals					Storage Area			
	Shipping Name	UN No.	Class	Sub Risk	Packing Group	Type of Area	Design capacity	Diameter	Quantity
SA1	Sulphur	1350	4.1		III	Open area	60,000kg	8m	20,000kg

Notes:

- 'Area' should correspond to the locations in the site plan.
- The 'Class/Division' of flammable liquids category 4 is 'Combustible liquid'.

- For Unstable explosives, Organic Peroxide Type A or Self-reactive substance type A, the name of the hazardous chemical is the same as is stated in the ADG code. The 'Class/Division' is 'Goods too dangerous to be transported'.
- 'Type of area' might include 'Roofed Store', 'Drum store' etc.

HAZARDOUS CHEMICALS STORED IN TANKS

This does not include hazardous chemicals stored in intermediate bulk containers (IBCs).

Area	Hazardous chemicals					Tanks			
	Shipping Name	UN No.	Class	Sub Risk	Packing Group	Type	Capacity	Diameter	Quantity
DGT1	Methanol	1230	3	6.1	II	u/g	30,000L	3m	20,000L

Notes:

- The diameter of the tank is required for a fixed vertical tank used to store fire risk hazardous chemicals.
- Type refers to underground (u/g) or above ground (a/g).

Package store 1

Area	Hazardous chemicals					Storage Area		
	Shipping Name	UN No.	Class	Sub Risk	Packing Group	Type of Area	Average Quantity	Largest Quantity
PS1	Chlorine	1017	2.3	5.1 8		Cylinders in use	70L	70L

Package store 2

Area	Hazardous chemicals					Storage Area		
	Shipping Name	UN No.	Class	Sub Risk	Packing Group	Type of Area	Average Quantity	Largest Quantity
PS2	Organophosphorus pesticide, liquid, toxic	3018	6.1		II	Roofed store	2,000L	2,500L

MANUFACTURING AREAS

Area	Hazardous chemicals					Manufacturing Area	
	Shipping Name	UN No.	Class	Sub Risk	Packing Group	Average Quantity	Largest Quantity
MA1	Isopropanol (Isopropyl alcohol)	1219	3		II	2,500L	4,000L

CHEMICALS IN TRANSIT

A chemical is considered 'in transit' if it:

- is supplied to, or stored at, a workplace in containers that are not opened at the workplace; and
- is not used at the workplace; and
- is kept at the workplace for not more than 5 consecutive days.

Providing all the associated transport documents are kept with the manifest, then a separate table like the one below is not required.

Transit Areas

Area	Hazardous chemicals					Transit Area	
	Shipping Name	UN No.	Class	Sub Risk	Packing Group	Average Quantity	Largest Quantity
TA1	Krypton, compressed	1056	2.2			500L	1,000L

Consider also a site plan, showing the location of the hazardous substances.

SIGNATURE:

Manifest approved by: ……..

Position: ……..

Date: ……

Signature: ……

Contact Information

For further information about Hazardous Substances in Workplace and OSH Compliance contact MCIL/OSH Unit

P.O. Box 862, Apia, SAMOA| Telephone:(685)20441/20442/20443
Email: mpal@mcil.gov.ws. Level 4, ACC House, Apia | Website:
www.mcil.gov.ws