



اوتوري تي كڀڻ سائن ڪسلامتن
ڪصپڻن. دان عالم سڪيتر

Safety, Health and Environment
National Authority

MANAGING GENERAL HAZARDOUS SUBSTANCES IN A WORKPLACE





اوتوريتي كېڭىسلىك كىمىيەسى
كەسپىي دانىشمانلىق
Safety, Health and Environment
National Authority

INDUSTRY GUIDANCE NOTE

TOPIC: MANAGING GENERAL HAZARDOUS SUBSTANCES IN A WORKPLACE				Reference Number: 2026/IGN/02
Approved by: Director of Compliance and Registration Division	Endorsed by: Chief Executive Officer	Issue date: 30 September 2026	Expiry date: None	Revision No: 1.0

TABLE OF CONTENTS

1. INTRODUCTION	5
2. GLOSSARY OF TERMS AND ABBREVIATIONS	7
3. PURPOSE	13
4. SCOPE	14
5. APPLICABLE LAWS AND REGULATIONS.....	14
6. HAZARD CLASSIFICATION	16
6.1 BASIS OF HAZARD CLASSIFICATION.....	16
6.2 PHYSICAL HAZARDS	16
6.3 HEALTH HAZARDS.....	17
6.4 ENVIRONMENTAL HAZARDS	18
6.5 USE OF HAZARD CLASSIFICATION IN THE WORKPLACE	19
7. EFFECTS OF HAZARDOUS SUBSTANCES	19
7.1 HEALTH EFFECTS.....	20
7.2 PHYSICAL SAFETY EFFECTS.....	20
7.3 IMPLICATIONS TO WORKPLACE SAFETY AND HEALTH	20

8. RISK MANAGEMENT	21
8.1 HAZARD IDENTIFICATION AND RISK ASSESSMENT	21
8.2 RISK CONTROL MEASURES.....	22
9. WARNING LABELS.....	23
9.1 GHS WARNING LABEL	23
9.2 DECANTING AND SECONDARY CONTAINERS	24
9.3 WORKPLACE APPLICATION OF WARNING LABELS	25
10. SAFETY DATA SHEETS (SDS)	25
11. REGISTER & INVENTORY.....	26
11.1 HAZARDOUS SUBSTANCE REGISTER	27
11.2 MAINTENANCE AND ACCESSIBILITY	27
11.3 USE OF REGISTER & INVENTORY IN EMERGENCY PREPAREDNESS	27
12. LIFECYCLE MANAGEMENT OF HAZARDOUS SUBSTANCES	27
12.1 SELECTION	28
12.2 TRANSPORT	29
12.3 STORAGE	29
12.4 HANDLING & USE	31
12.5 DISPOSAL AND WASTE MANAGEMENT	32
12.5.1 DISPOSAL PLANNING AND CONTROL MEASURES.....	32
12.5.2 OFF-SITE DISPOSAL AND EXTERNAL REQUIREMENTS.....	32
12.5.3 SEGREGATION AND SPECIAL CIRCUMSTANCES	33
13. EMERGENCY PREPAREDNESS AND RESPONSE	33
13.1 HAZARDOUS SUBSTANCE SPILL PREPAREDNESS	33
13.2 EMERGENCY SHOWERS AND EYE WASH FACILITIES.....	36
13.3 EMERGENCY RESPONSE PLANNING.....	37
13.4 REPORTING OF INCIDENTS AND OCCUPATIONAL DISEASES	37
14. TOXIC SUBSTANCE EXPOSURE MONITORING.....	38
14.1 PURPOSE OF EXPOSURE MONITORING.....	38
14.2 CONDUCT OF EXPOSURE MONITORING.....	40

14.3	REVIEW AND USE OF MONITORING RESULTS	41
15.	HEALTH SURVEILLANCE (MEDICAL EXAMINATION)	41
15.1	ROLE OF HEALTH SURVEILLANCE IN RISK MANAGEMENT	42
16.	EFFECTIVE MANAGEMENT OF HAZARDOUS SUBSTANCES	42
17.	REFERENCES	43
18.	APPENDICES	45
	APPENDIX A: HAZARDOUS SUBSTANCE REGISTER AND INVENTORY LIST TEMPLATE – EXAMPLE	45
	APPENDIX B: GHS CLASSIFICATION AND LABELLING SUMMARY TABLES.....	46
	APPENDIX C: KEY ELEMENTS IN MANAGING GENERAL HAZARDOUS SUBSTANCES IN THE WORKPLACE	48

DISCLAIMER

This Industry Guidance Note (IGN) is issued by the Safety, Health and Environment National Authority (SHENA) to provide guidance on the management of General Hazardous Substances in the workplace. This IGN is not a statutory document and does not create or replace any legal obligations under the Workplace Safety and Health Act (Chapter 277) or its subsidiary regulations. In the event of any inconsistency, the provisions of the WSHA and its subsidiary regulations shall prevail. Workplaces may adopt alternative measures, provided that the applicable legal requirements are met and an equivalent level of safety and health protection is achieved.

Copyright © SHENA 2026. All rights reserved.

ACKNOWLEDGEMENT

The Safety, Health and Environment National Authority (**SHENA**) would like to extend its appreciation to the following agencies and organisations for the review and feedback made to this Industry Guidance Note (**IGN**):

1. National Security Committee, Prime Minister's Office
2. Department of Environment, Parks and Recreation (**JASTRe**), Ministry of Development
3. Department of Scientific Services, Ministry of Health
4. Petroleum Authority of Brunei Darussalam
5. Universiti Brunei Darussalam (**UBD**)
6. Occupational Health Committee (**OH-Comm**)
7. Brunei Liquefied Natural Gas (**BLNG**)
8. Jerudong Park Medical Centre (**JPMC**)
9. Panaga Health Centre
10. Kare Occupational Health Specialist Clinic
11. Yong Clinic & Dispensary

1. INTRODUCTION

Hazardous substances are widely used in workplaces and may pose detrimental effects to the health and safety of workers, whether short or long term, the surrounding environment and community, as well as impact to assets when not used, handled, stored, contained, maintained, transported or / and disposed responsibly. To effectively control risks associated, robust management of hazardous substances in the workplace is required.

The management of hazardous substances in the workplace includes safe selection, transport, storage, use, handling, and disposal of the substances in line with the Workplace Safety and Health Act, Chapter 277 (**WSHA, Cap 277**) and its subsidiary regulations thereunder and internationally recognised best practices such as the International Labour Organization (**ILO**) Code of Practice Safety in the Use of Chemicals at Work.

Under Schedule 5, Part 2 Division 1 of the WSHA, Cap 277, the following are classified as General Hazardous Substances:

- | | |
|--|--|
| 1. Corrosive substances; | 2. Flammable substances; |
| 3. Explosives; | 4. Oxidising substances; |
| 5. Pyrophoric substances; | 6. Gases under pressure; |
| 7. Organic peroxides; | 8. Self-heating substances; |
| 9. Self-reactive substances; | 10. Substances which, in contact with water, emit flammable gases; |
| 11. Toxic substances; | 12. Mutagens; |
| 13. Carcinogens; | 14. Teratogens; |
| 15. Sensitisers; | 16. Irritants; and |
| 17. Substances hazardous to aquatic environment. | |

The definitions of each hazardous substance are detailed further in [Section 2: Glossary of Terms and Abbreviations](#) below. The WSHA, Cap 277 and its subsidiary regulations set out **specific provisions relating to health, safety, and welfare concerning hazardous substances in the workplace**, with the following:

1. All hazardous substances in a workplace shall be placed under the control of a **competent person**;
2. **Adequate warning notices** in languages understood by persons at work, **specifying the hazards** shall be placed at all entrances to any workroom and appropriate locations where hazardous substances are used or present;
3. Persons at work who are exposed to hazardous substances shall be **warned of the hazards involved and the precautionary measures to be taken**;

4. All hazardous substances shall be **kept, stored, used, handled or disposed** of in a manner that does not pose a risk to the health and safety of any person at work;
5. Any container of hazardous substances should be affixed with **one or more warning labels meeting Globally Harmonized System of Classification and Labelling of Chemicals (GHS) standards**;
6. For any hazardous substance used, handled or stored in the workplace, **the Safety Data Sheet (SDS) must be obtained, assessed for precautionary measures and made readily accessible** to all persons at work who may be exposed to the substance;
7. Workplaces dealing with hazardous substance shall appoint a **trained occupational first-aider for workplaces**;
8. Ensure the **provision for emergency treatment** of any potential exposure to toxic or corrosive substances; and
9. A Workplace Safety and Health (WSH) Officer shall be appointed in accordance with Schedule 2 of WSH (WSH Officers) Regulations for the following:
 - a. Premises used for **processing any hazardous substance specified in Schedule 5, Part 2, Division 2 Specific Hazardous Substances** of WSHA, Cap 277 including exploration, exploitation, extraction, drilling intervention, handling, storage or disposal of the hazardous substances. This includes the premises for the provision of:
 - a. Offshore accommodation for persons working on another premises, whether connected to that premises or not; and
 - b. Services and maintenance of the premises.
 - b. Factory involving the **handling, sorting, packing and storing, processing, manufacturing, use, disposal of any hazardous substance** (excluding petroleum or petroleum products) in **which 100 or more persons are employed**, except those which are used for manufacturing garments.

To support the implementation of this IGN, SHENA has developed a Self-Assessment Checklist for Managing General Hazardous Substances in a Workplace. Workplaces are encouraged to use the checklist to assess their current hazardous substance management practices and identify areas for necessary improvements. The checklist can be accessed via the QR code provided below:



Self-Assessment Checklist for Managing General Hazardous Substances in a Workplace

Scan the QR code to access the checklist.

2. GLOSSARY OF TERMS AND ABBREVIATIONS

TERMS	DEFINITION
ACUTE TOXICITY	Serious adverse health effects (i.e., lethality) occur after a single or short-term oral, dermal or inhalation exposure to a substance or mixture ¹ .
ADMINISTRATIVE CONTROL	The implementation of any administrative requirement which includes a permit-to-work system ² .
AEROSOLS	Any non-refillable receptacles made of metal, glass or plastics and containing a gas compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state ¹ .
ASPIRATION TOXICITY	The entry of poisonous substance into the trachea and lower respiratory system directly through the oral or nasal cavity, or indirectly from vomiting ¹ .
CARCINOGEN	A substance or a mixture which induces cancer or increases its incidence ¹ .
COMPETENT PERSON	For the purposes of this IGN, competent person is a person who has acquired sufficient training, adequate knowledge and practical experiences relevant to performing the work required to be carried out, and has passed such courses as SHENA may require. Such competent person would also be able to understand and identify associated risks and hazards related to the hazardous substances that are under their control and to be able to recommend measures required for the safe management. The competent person provides technical expertise and oversight in the management of hazardous substances to assist principals, employers, occupiers, self-employed persons, and other duty holders in complying with their legal obligations relating to hazardous substances.
CONSUMER PACKAGE	A container that is intended for retail display and sale to households or offices and includes a container that is transported or distributed as part or larger consolidated container that consists of a number of identical consumer packages ³ .

¹ United Nations. Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Seventh revised edition, New York and Geneva, 2017.

² Workplace Safety and Health (Risk Management) Regulations.

³ Workplace Safety and Health (General Provisions) Regulations.

CONTAINER	Anything in or by which substances are or have been wholly or partly encased, covered or packed ³ .
CORROSIVE TO METALS	A substance or a mixture which by chemical action will materially damage, or even destroy, metals ¹ .
CORROSIVE TO SKIN AND SERIOUS EYE DAMAGE	Highly reactive substances that cause obvious damage to living tissue ¹ .
DESIGNATED WORKPLACE DOCTOR	A medical practitioner who is trained in Occupational Health and Safety and registered with both the Brunei Medical Board and SHENA.
EMPLOYER	A person who, in the course of his trade, business, profession or undertaking, employs any person to do any work under a contract of service ⁴ .
ENGINEERING CONTROL	The application of any scientific principle for the control of any workplace hazard; and includes the application of physical means or measures to any work process, equipment or the work environment such as the installation of any barrier, enclosure, guarding, interlock or ventilation system ² .
ENVIRONMENTAL HAZARD	These are properties of hazardous substance that could harm the environment, especially aquatic ecosystems . ⁵
ENVIRONMENTAL TOXICITY OR HAZARDOUS TO THE AQUATIC ENVIRONMENT	Acute aquatic toxicity; potential for or actual bioaccumulation; degradation (biotic or abiotic) for organic chemicals; and chronic aquatic toxicity ¹ .
EXPLOSIVES	Solid or liquid substances (or mixture of substances) which are in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings ¹ .

⁴ Workplace Safety and Health Act, Chapter 277

FACTORY	Means any premises within which persons are employed in any of the following processes¹:- (a) the handling, sorting, packing, storing, altering, repairing, construction, processing or manufacturing of any goods or products; (b) the handling, sorting, packing, storing, processing, manufacturing, use, disposal or in relation to, of any hazardous substance; (c) the repair, construction or manufacturing of any vessel or vehicle; (d) any building operation or work of engineering construction; (e) the operation or maintenance of any facility or system related to the provision of any public utility.
FLAMMABLES	Those substances that will ignite and continue to burn in air if exposed to a source of ignition ¹ .
GASES UNDER PRESSURE	Gases which are contained in a receptacle at a pressure of 200 kPa (gauge) or more at 20°C, or which are liquefied or liquefied and refrigerated ¹ .
HAZARD	Anything with potential to cause bodily injury, and includes any physical, chemical, biological, mechanical, electric or ergonomic hazard ² .
HAZARD STATEMENT	A statement assigned to a hazard class and category that describes the nature of the hazards of a hazardous product, including, where appropriate, the degree of hazard ¹ .
HAZARDOUS SUBSTANCE	A substance or mixture of substances which by virtue of chemical, physical or toxicological properties, either singly or in combination, constitute a hazard ⁶ . For the purpose of this IGN, “Hazardous Substances” include any general hazardous substance specified in Part 2, Division 1 of Schedule 5 to the WSHA, Cap 277, as well as any other substance that exhibits hazardous properties consistent with the characteristics described above.
HEALTH HAZARD	These are properties of hazardous substance that could harm human health ⁵ .

⁶ ILO. Background information for developing an ILO policy framework for hazardous substances, International Labour Office, Geneva, Switzerland, 2007.

INTRINSIC	Being an extremely important and basic characteristic of a person or thing ⁷ .
IRRITANT	A substance which causes the production of reversible damage causing slight inflammation or other discomfort to the body ¹ .
MUTAGEN	An agent giving rise to an increased occurrence of mutations in populations of cells and/or organisms ¹ .
OCCUPIER	In relation to any premises or part of any premises, means: (a) In the case of a workplace where a certificate of registration or a workplace permit has to be obtained in relation to the premises pursuant to any regulations, the person who is, or is required to be, the holder of that certificate or permit ; and (b) In the case of any other premises, the person who has charge, management or control of those premises either on his own account or as agent of another person, whether or not he is also the owner of those premises ⁴ .
ORGANIC PEROXIDES	Solid or liquid organic substances which contain the bivalent -O-O- structure and may be considered a derivative of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals ¹ .
OXIDISER/OXIDISING AGENT	A substance (gas, liquid or solid) which, while in itself is not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material ¹ .
PERMISSIBLE EXPOSURE LEVEL (PEL)	The maximum time weighted average concentration of a toxic substance which is connected or used for the purpose of making a product ³ .
PHYSICAL HAZARDS	These are properties of hazardous substances that could cause fires, explosions or other dangerous physical reactions ⁵ .
PICTOGRAM	A graphical composition that may include a symbol plus other graphic elements, such as a border, background pattern or colour that is intended to convey specific information ¹ .
PRECAUTIONARY STATEMENT	A phrase (and/or pictogram) that describes recommended measures that should be taken to minimise or prevent adverse effects resulting from exposure to a hazardous product, or improper storage or handling of a hazardous product ¹ .

⁷ Definition of **intrinsic** from the Cambridge Advanced Learner's Dictionary & Thesaurus © Cambridge University Press.

PRINCIPAL	A person who, in connection with any trade, business, profession or undertaking carried on by him, engages any other person otherwise than under a contract of service: (a) To supply any labour for gain or reward; or (b) To do any work for gain or reward⁴.
PYROPHORIC	Highly reactive chemicals that spontaneously ignite when exposed to air ¹ .
REGISTERED MEDICAL PRACTITIONER	A person registered under the Medical Practitioners and Dentists Act (Chapter 112)
RESPIRATORY SENSITISER	Substances or mixture that induces hypersensitivity of the airways occurring after inhalation of the substance or mixture ¹ .
RESPIRATORY TRACT IRRITATION	Characterised by localised redness, edema, pruritic and/or pain that impair function with symptoms such as cough, pain, choking, and breathing difficulties ¹ .
RISK	The likelihood that a hazard will cause a specific bodily injury to any person ² .
RISK ASSESSMENT	The process of evaluating the probability and consequences of injury or illness arising from exposure to an identified hazard and determining the appropriate measures for risk control ² .
SAFE WORK PROCEDURE	Any procedure for carrying out work safely and includes any procedure which is to be taken to protect the safety and health of people in the event of an emergency ² .
SELF-EMPLOYED PERSON	A person who works for gain or reward otherwise than under a contract of service, whether or not employing others ⁴ .
SELF-HEATING	Solid or liquid substance or mixture, other than a pyrophoric substance, which, by reaction with air and without energy supply, is liable to self-heat ¹ .
SELF-REACTIVE	Thermally unstable liquid or solid substances or mixtures liable to undergo a strongly exothermic decomposition even without the participation of oxygen (air) ¹ .
SIGNAL WORD	A word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label ¹ .
SKIN SENSITISER	A substance or mixture that will induce an allergic response following skin contact ¹ .

SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES	Substances or mixtures which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities ¹ .
SUBSTITUTION	The replacement of any hazardous material, process, operation, equipment, or device with less hazardous ones ² .
TARGET ORGAN TOXICITY	(a) Single exposure – non-lethal toxic effects on target organs occurring after a single exposure to a substance or mixture; (b) Repeated exposure- toxic effects on target organs occurring after repeated exposure to a substance or mixture ¹ .
TERATOGEN	Any agent that causes an abnormality following fetal exposure during pregnancy ⁸ .
TOXIC SUBSTANCES	Any substance which may cause irritation, bodily injury or any harmful effect to a person through ingestion, inhalation or contact with any body surface, and includes any substance specified in the Schedule 1 of WSH (General Provisions) Regulations ³ .
WORKPLACE	In the Workplace Safety and Health Act, Chapter 277 (WSHA), “workplace” means any premise where a person is at work, is to work or customarily works, and includes a factory as stipulated under Section 5 (2) of the WSHA, Cap 277 ⁴ .

Abbreviations:

ALARP	As Low As Reasonably Practicable
ASEAN	Association of Southeast Asian Nations
DWD	Designated Workplace Doctor
GHS	Globally Harmonized System of Classification and Labelling of Chemicals, Seventh Revised Edition
ICSC	International Chemical Safety Card
IGN	Industry Guidance Note
ILO	International Labour Organization

⁸ Genetic Alliance; District of Columbia Department of Health. Understanding Genetics: A District of Columbia Guide for Patients and Health Professionals, Genetic Alliance, Washington (DC), 2010. Appendix D, Teratogens/Prenatal Substance Abuse.

NTI	Note to Industry
PEL	Permissible Exposure Levels
PPE	Personal Protective Equipment
SDS	Safety Data Sheets
WHO	World Health Organization
WSH	Workplace Safety and Health
WSHA, Cap 277	Workplace Safety and Health Act, Chapter 277, the primary Law on Workplace Safety and Health in Brunei Darussalam, introduced in 2009 that sets the general framework to which all workplaces shall comply and has been enforced with effect from 1 st August 2013

In this document, the following terms are used as indicated below:

- a) “shall” = a legal requirement
- b) “should” = a recommendation
- c) “may” = a permission or optional course of action
- d) “can” = a possibility or a capability.

3. PURPOSE

The purpose of this IGN is to provide guidance and recommended practices to support workplaces in the management of general hazardous substances from a workplace safety and health perspective.

This IGN aims to assist principals, employers, occupiers, self-employed persons and persons at work in understanding and implementing measures to **identify hazards, assess risks and apply appropriate controls** associated with the safe selection, transport, storage, use, handling, and disposal of the substances of hazardous substances in the workplace.

This IGN supports compliance with the **WSHA, Cap 277** and its subsidiary regulations and complements the implementation of [the Workplace Safety and Health Management System Code of Practice \(WSHMS COP\)](#) issued by SHENA. It provides guidance to support **Element 5.10: Management of Hazardous Substances of the WSHMS COP**.

This IGN is intended to be used as a practical reference to promote consistent, risk-based and proportionate approaches to managing hazardous substances, with the objective of reducing risks to the safety and health of persons at work to **ALARP**.

4. SCOPE

This IGN outlines guidance to support workplaces, as defined under the WSHA, Cap 277, and its regulations thereunder, in establishing and implementing systems and controls for the **management of General Hazardous Substances from a workplace safety and health perspective.**

This IGN focuses on the identification, assessment and control of risks associated **with selection, transport, storage, labelling, use, handling and disposal of hazardous substances within the workplace**, with the aim of minimising risks to the safety and health of persons at work to ALARP.

For the avoidance of doubt, this IGN applies primarily to General Hazardous Substances as defined under Schedule 5, Part 2, Division 1 of the WSHA, Cap 277. Certain hazardous substances listed under Schedule 5, Part 2, Division 2 may also fall within one or more hazard classifications under Division 1 (based on their properties as stated in the Safety Data Sheet) and may therefore be managed in accordance with this IGN. Where such substances are present in quantities that exceed the prescribed threshold limits under the Workplace Safety and Health (Facilities) (Control of Major Accident Hazard) Regulations, the applicable COMAH requirements shall apply in addition to the guidance provided in this IGN.

This IGN also **does not cover:**

- aspects of occupational hygiene measurement, sampling and analysis of hazardous or toxic substances; or
- specific requirements relating to environmental protection, hazardous waste regulation or pollution control administered by other authorities; or
- emergency response arrangements beyond workplace-level preparedness and actions intended to protect persons at work.

Workplaces remain responsible for complying with any additional requirements imposed under other applicable laws and regulations administered by relevant authorities.

5. APPLICABLE LAWS AND REGULATIONS

The management of hazardous substances in the workplace is governed by the WSHA, Cap 277 and its subsidiary regulations, which together establish the legal framework for protecting the safety and health of persons at work in Brunei Darussalam.

This IGN is issued under SHENA's mandate to promote workplace safety and health and provides guidance to support compliance with the WSHA, Cap 277 and its subsidiary regulations. It does not replace or diminish the legal duties imposed on duty holders under applicable legislation.

Key workplace safety and health legislation relevant to the management of hazardous substances includes, but is not limited to:

Workplace Safety and Health Act (Chapter 277): Sets out the general duties of principals, employers, occupiers, self-employed persons and other duty holders to ensure the safety and health of persons at work, including duties relating to the safe use, handling, storage and disposal of hazardous substances. It also outlines the duties of manufacturers and suppliers in relation to hazardous substances used at work to provide adequate hazard information, precautions, and any test results.

Workplace Safety and Health (Risk Management) Regulations: Require workplaces to conduct risk assessments in order to identify hazards, assess risks and implement reasonably practicable control measures for workplace activities involving hazardous substances.

Workplace Safety and Health (General Provisions) Regulations: Provide specific requirements relating to hazardous substances, including matters such as warning labels, Safety Data Sheets, control of exposure, and the management of hazardous substances in the workplace. However, these do not apply in respect of the use, handling or storage in a workplace, or the sale for use in a workplace, of any hazardous substance that is in a consumer package, intended for retail sale and use in households or offices.

Workplace Safety and Health (Incident Reporting) Regulations: Provide requirements for the reporting of incidents, dangerous occurrences and occupational diseases arising from workplace activities, including those involving hazardous substances.

Workplace Safety and Health (First-Aid) Regulations: Establish requirements for first-aid arrangements, including emergency treatment facilities relevant to exposure to hazardous substances.

Workplace Safety and Health (Workplace Safety and Health Officers) Regulations: Set out requirements for the appointment and functions of Workplace Safety and Health Officers in prescribed workplaces, including those involving hazardous substances as stated under [Section 1: Introduction](#) above.

Hazardous substances may also be subject to requirements administered by other authorities, such as those relating to environmental protection, fire safety, import, transport or public safety. Where such requirements apply, workplaces remain responsible for complying with them in addition to their obligations under workplace safety and health legislation.

This IGN focuses on **workplace safety and health considerations within SHENA's mandate** and is intended to complement, not replace, requirements imposed by other relevant authorities.

6. HAZARD CLASSIFICATION

Effective management of hazardous substances in the workplace requires a clear understanding of the hazards posed by the substances used, handled or stored. Hazard classification provides the basis for identifying risks to persons at work and for selecting appropriate control measures.

From a workplace safety and health perspective, hazard classification supports:

- risk assessment and control under the WSH (Risk Management) Regulations;
- hazard communication through warning labels and Safety Data Sheets (SDS); and
- worker awareness and training on safe handling and emergency response.

6.1 BASIS OF HAZARD CLASSIFICATION

SHENA applies the **Globally Harmonized System of Classification and Labelling of Chemicals, Seventh Revised Edition (GHS Rev.7)**, which is the most commonly used revision in ASEAN, as the baseline reference framework for classifying hazardous substances and communicating hazards in the workplace.

Under the GHS approach, hazardous substances are classified based on their **intrinsic properties**, and hazards are grouped into the following broad categories:

1. Physical hazards;
2. Health hazards; and
3. Environmental hazards.

The complete GHS Classification and Labelling Summary Tables can be referred to [Appendix B](#) of the GHS Rev.7. In the workplace context, hazard classification information is typically obtained from the Warning label and the SDS provided by the manufacturer or supplier and should be reviewed as part of the risk assessment process.

6.2 PHYSICAL HAZARDS

Physical hazards arise from the chemical or physical properties of substances that may pose risks such as fire, explosion or other dangerous reactions in the workplace. Examples of physical hazard classes include, but are not limited to:

- flammable substances;
- explosives;
- oxidising substances;
- gases under pressure;
- self-reactive and pyrophoric substances; and
- substances that are corrosive to metals.

Understanding physical hazards assists workplaces in implementing appropriate controls to prevent incidents such as fires, explosions or loss of containment.

The **GHS** pictograms for physical hazards are shown in **Table 1** below.

Table 1: Physical hazards pictograms.

	▪ Oxidiser
	▪ Flammables ▪ Aerosols ▪ Self-reactive ▪ Pyrophoric ▪ Self-heating ▪ Emits flammable gas
	▪ Explosive ▪ Self-reactive ▪ Organic peroxide
	▪ Gases under pressure
	▪ Corrosive to metals

6.3 HEALTH HAZARDS

Health hazards relate to the potential adverse effects of hazardous substances on persons at work following exposure. Examples of health hazard classes include, but are not limited to:

- acute toxicity;
- skin or eye corrosion and irritation;

- respiratory or skin sensitisation;
- carcinogenicity, mutagenicity or reproductive toxicity; and
- target organ toxicity.

Identification of health hazards supports the selection of suitable exposure controls, health surveillance measures, personal protective equipment and emergency response arrangements, where applicable.

The GHS pictograms for health hazards are shown in **Table 2** below.

Table 2: Health hazards pictograms.

	▪ Acute toxicity (severe)
	▪ Carcinogen ▪ Respiratory sensitiser ▪ Teratogen (reproductive toxicity) ▪ Target organ toxicity ▪ Mutagen (mutagenicity) ▪ Aspiration toxicity
	▪ Corrosive to skin and serious eye damage
	▪ Irritant ▪ Skin sensitiser ▪ Acute toxicity ▪ Narcotic effects ▪ Respiratory tract irritation

6.4 ENVIRONMENTAL HAZARDS

Environmental hazards relate to the potential adverse effects of hazardous substances on the environment, particularly the aquatic environment and the ozone layer. While environmental hazards may not directly affect the safety and health of persons at work, they are included in this IGN for reference as part of the GHS of Classification and Labelling of Chemicals.

The GHS pictograms for environmental hazards are shown in **Table 3** below.

Table 3: Environmental hazards pictograms.

	▪ Hazardous to the aquatic environment
	▪ Hazardous to the ozone layer

6.5 USE OF HAZARD CLASSIFICATION IN THE WORKPLACE

Hazard classification information should be used by workplaces to:

- inform risk assessments and the selection of control measures;
- determine appropriate warning labels and hazard communication requirements;
- develop safe work procedures and training programmes; and
- support emergency preparedness and response arrangements.

Hazard classification alone does not determine risk. The actual risk to persons at work depends on how the substance is used, the extent of exposure, and the effectiveness of control measures implemented in the workplace.

7. EFFECTS OF HAZARDOUS SUBSTANCES

Hazardous substances used, handled or stored in workplaces may give rise to adverse effects on the safety and health of persons at work, depending on their intrinsic properties, the nature of exposure, and the effectiveness of control measures.

Understanding these potential effects is essential for identifying risks and implementing appropriate workplace controls. From a workplace safety and health perspective, the effects of hazardous substances can generally be categorised into the following areas:

7.1 HEALTH EFFECTS

Exposure to hazardous substances may result in **acute or chronic health effects**, depending on the substances involved, the route of exposure (e.g. inhalation, skin contact, ingestion), and the duration and level of exposure. Health effects may include, but are not limited to:

- **Acute effects**, such as poisoning, burns, irritation or respiratory distress, e.g. from hydrogen cyanide or mercury gas, which may occur immediately or shortly after exposure;
- **Chronic effects**, such as organ damage or occupational diseases, e.g. from benzene, crystalline silica or n-hexane, which may develop following prolonged or repeated exposure;
- **Specific effects** on particular organs or systems, e.g. cadmium (kidneys), manganese (nervous system), lead compounds (reproductive health) or toluene (central nervous system). These effects may not always be immediately apparent.

Accordingly, workplaces should take into account both short-term and long-term health risks when assessing exposure to hazardous substances.

7.2 PHYSICAL SAFETY EFFECTS

In addition to health effects, hazardous substances may pose **physical safety risks** in the workplace arising from their chemical or physical properties. Such effects may include:

- **Skin and eye damage**, e.g. from corrosive substances such as sulphuric acid or sodium hydroxide;
- **Chemical reactions** resulting in the sudden release of energy, heat or pressure, e.g. incompatible mixtures such as acids and alkalis;
- **Fire and explosion hazards**, e.g. from flammable liquids (acetone), flammable gases (liquefied petroleum gas), combustible dusts (flour dust, aluminium powder), or other explosive and reactive substances.

These physical effects may lead to injuries directly, or indirectly through secondary incidents such as fires, structural failure or loss of containment.

7.3 IMPLICATIONS TO WORKPLACE SAFETY AND HEALTH

The potential effects of hazardous substances on health and safety should be considered as part of the workplace's risk management process. This includes:

- identifying substances with hazardous properties;
- assessing the likelihood and severity of adverse effects under actual workplace conditions; and
- implementing control measures to eliminate or reduce risks to As Low As Reasonably Practicable (**ALARP**).

Understanding the effects of hazardous substances enables workplaces to select appropriate controls, develop safe work procedures, provide effective training, and establish suitable emergency response and health surveillance arrangements, where applicable.

8. RISK MANAGEMENT

Effective management of hazardous substances relies on a **systematic approach to risk management** to identify hazards, assess risks and implement appropriate control measures to protect the safety and health of persons at work.

In accordance with the Workplace Safety and Health (Risk Management) Regulations, every workplace **is required to carry out risk assessments** for activities involving hazardous substances before such substances are used, handled, stored, transported or disposed of. The risk assessments shall be **effectively communicated** to all persons at work involved by the employer, self-employed and principal of the workplace.

Risk management for hazardous substances should be integrated into the workplace's overall risk management system and aligned with its safety and health management arrangements.

8.1 HAZARD IDENTIFICATION AND RISK ASSESSMENT

Risk assessments involving hazardous substances should consider the following items, where applicable:

- the hazardous properties of the substances used or present;
- the type, form and quantity of substances involved;
- work activities and processes (e.g. mixing, decanting, spraying, heating);
- routes of exposure, including inhalation, skin contact and ingestion;
- duration and frequency of exposure;
- workplace environment and ventilation;
- current and new control measures according to the hierarchy of control ([Figure 1](#));
- characteristics and competency of persons at work, including vulnerable groups (new workers, pregnant workers, pre-existing health conditions); and
- foreseeable emergency situations such as spills, leaks or accidental exposure.

For further reference on the risk management process, including the conduct, review and record of risk assessments, workplaces may refer to the [Code of Practice: WSH \(Risk Management\)](#).

Regulation 41 of the WSH (General Provisions) Regulations requires a competent person specifically for the control of hazardous substances. This competent person must have adequate knowledge of the hazardous substances used, their properties and associated

dangers, and defined as an individual who has sufficient experience and training to perform the work required, and who has passed any courses that SHENA may require for that work.

Where hazardous substances include toxic substances that may cause any harmful effect to a person through ingestion, inhalation or contact with any body surface, and includes any substance specified in the Schedule 1 of the WSH (General Provisions) Regulations, a more detailed quantitative risk assessment may be required. This requires toxic substance exposure monitoring to verify that workers are not exposed above the PEL specified in Schedule 1 of the WSH (General Provisions) Regulations. Toxic substance exposure monitoring requirements and competency are further described in [Section 14](#).

Where workplaces lack sufficient internal expertise on hazardous substances, it may be appropriate to seek assistance from suitably qualified external persons such as Health and Safety Consultant or Occupational Hygienists, while continuing to build internal capability through training and worker involvement.

8.2 RISK CONTROL MEASURES

Where risks associated with hazardous substances are identified, workplaces shall implement measures to **eliminate or reduce risks to ALARP**. Control measures shall be selected and implemented in accordance with the **hierarchy of control**, giving consideration to:-

- elimination or substitution of hazardous substances, where feasible;
- engineering controls (e.g. enclosure, automation, local exhaust ventilation);
- administrative controls (e.g. safe work procedures, training, restricted access); and
- personal protective equipment (PPE), where residual risks remain.

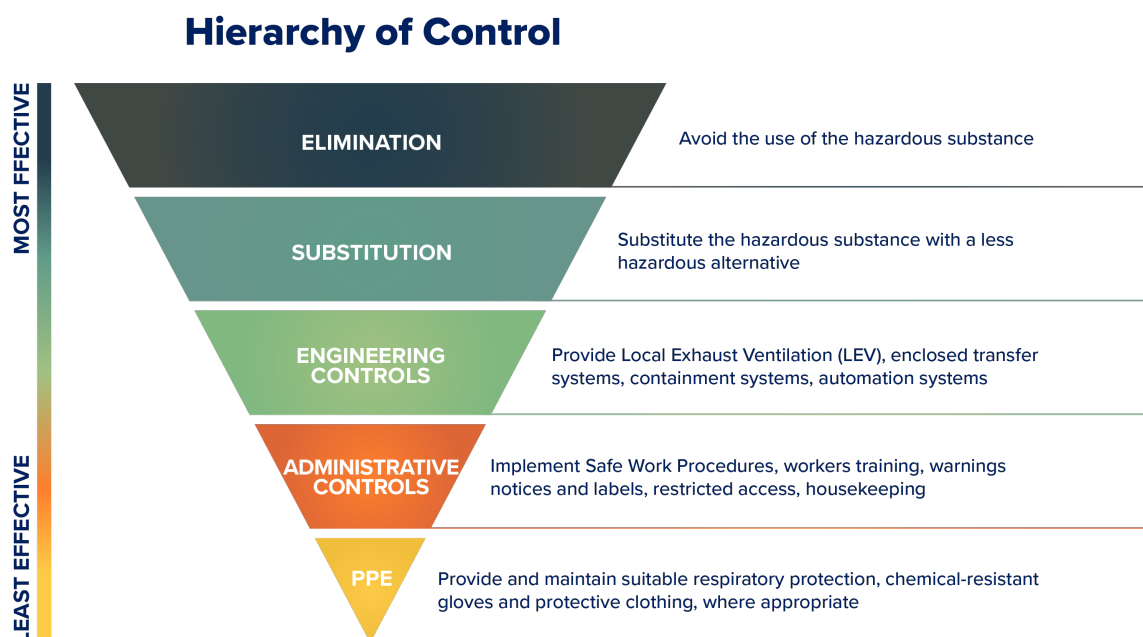


Figure 1: Hierarchy of Control with examples specific to hazardous substance management.

The choice and extent of control measures should be **proportionate to the level of risk**, taking into account the nature and quantity of hazardous substances involved and the potential severity of harm.

9. WARNING LABELS

The purpose of warning labels is to enable persons at work to **readily identify hazardous substances**, understand the hazards involved, and take precautionary measures to protect their safety and health while working with or near such substances. Warning labels are an important hazard communication tool that supports risk assessment, safe handling practices, and emergency response arrangements.

Regulation 42 of the WSH (General Provisions) Regulations states that the occupier of a workplace shall ensure that containers of hazardous substances used, handled or stored in the workplace are affixed with appropriate warning labels that reflect the hazards of the substance.

GHS-based warning labels as shown under [Section 6: Hazard Classification](#) provide a consistent and systematic means of communicating hazards to persons at work.

9.1 GHS WARNING LABEL

GHS warning labels typically include the following six (6) elements (see [Figure 2](#)):

1. Product identifier;
2. Supplier identification;
3. Hazard pictogram(s);
4. Signal word: a word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. There are two (2) signal words:
 - “Danger” for the more severe hazards; or
 - “Warning” for the less severe.
5. Hazard statement(s); and
6. Precautionary statement(s).

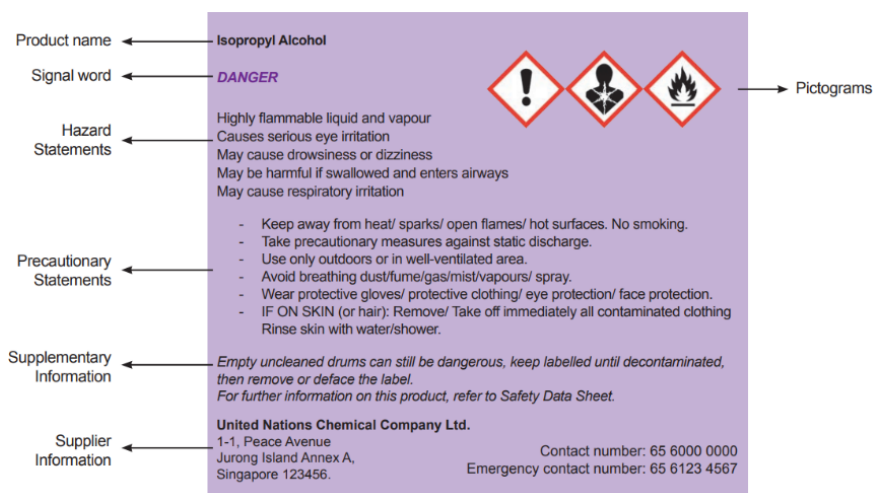


Figure 2: Example of a GHS warning label for Isopropyl Alcohol (ref: WSH Council Singapore)

These elements support effective communication of hazard information and assist persons at work in understanding the nature and severity of the risks involved, as well as the measures required to work safely.

9.2 DECANTING AND SECONDARY CONTAINERS

Where hazardous substances are decanted or transferred into another container (e.g., jerry cans, drums, spray bottles, or equipment) for workplace use, the contents should be clearly identified and the associated hazards communicated to persons at work.

For containers intended for immediate or temporary use (e.g., mixing in a beaker, bucket, or container under the worker's direct control), a reduced warning label may be used ([Figure 3](#)), provided that the substance is readily identifiable and the hazards are known to the user. Where decanted substances are stored, transported within the workplace, or left unattended, appropriate warning labels should be applied.



Figure 3: Example of a reduced warning label for Isopropyl Alcohol (ref: WSH Council Singapore)

9.3 WORKPLACE APPLICATION OF WARNING LABELS

Warning labels should be:

- clearly visible and legible;
- displayed in a manner and language understood by persons at work; and
- maintained in good condition.

Where warning labels become damaged, illegible or outdated, they should be replaced to ensure that hazard information remains accurate and effective.

10. SAFETY DATA SHEETS (SDS)

Safety Data Sheets (SDS) provide essential information on the safety and health measures of the hazardous substances needed to ensure their safe use, handling, labelling, storing, transporting and disposal, and emergency responses in the workplace. SDS serves as a key reference to support risk assessment, control measures, emergency preparedness and worker training.

Where hazardous substances are used, handled or stored in the workplace, the SDS should be obtained and reviewed to:

- identify the hazardous properties of the substance;
- understand potential health and physical effects arising from exposure;
- determine appropriate control measures, including safe handling and storage practices;
- inform emergency response actions, including first aid and spill management; and
- support training and communication to persons at work who may be exposed.

In accordance with Regulation 43(1) of the WSH (General Provisions) Regulations, the Occupier shall ensure that, for any hazardous substance used, handled or stored:

- a) an SDS for the substance is **obtained**;
- b) the information contained is **assessed** and **appropriate precautionary measures** are taken to ensure safe use of the substance; and
- c) the SDS is **made readily available** to persons at work who may be exposed to the substance.

The SDS should be reviewed and, if necessary, revised **at intervals not exceeding five (5) years, or earlier** where new information on hazards, controls or safe handling becomes available.

SDS may be stored as hard copies, or in electronic format, and placed near the work area. In workplaces using electronic access, it is essential that workers are trained to access the SDS, and that the information remains readily available during emergencies, including situations

where electronic systems or power supplies are unavailable (e.g. by maintaining backup hard copies in an accessible filing system).

If any hazardous substance is sold to a person for use in a workplace, the seller/supplier has to provide the buyer with an SDS for the substance. The SDS must give accurate and adequate information on the substance and conform with Brunei Darussalam's Standard relating to SDS or such other standards, codes of practice or guidance as issued or approved by SHENA. The SDS, as required by GHS, should contain the following information:

1. Identification
2. Hazard(s) identification
3. Composition/information on ingredients
4. First-aid measures
5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure control/ personal protection
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information

In addition to SDS, there is the International Chemical Safety Card (**ICSC**), developed by the International Labour Organization (**ILO**) and the World Health Organization (**WHO**) as supplementary, concise and peer-reviewed references to support worker understanding of hazards and safe practices. Such materials are intended to complement, and not replace, the SDS.

11. REGISTER & INVENTORY

Maintaining an up-to-date register and inventory of hazardous substances is an important component of effective workplace safety and health management. A hazardous substance register supports risk assessment, safe handling and storage practices, emergency preparedness, and communication of hazards to persons at work.

Workplaces storing and/or handling hazardous substances should establish and maintain a hazardous substance register and inventory that reflects the substances present in the workplace and is relevant to the associated safety and health risks.

11.1 HAZARDOUS SUBSTANCE REGISTER

The hazardous substance register should include, where applicable, information such as:

1. Chemical Name and Common Name;
2. Chemical Abstracts Service (CAS) Number, where available;
3. Supplier or Manufacturer information such as name and contact details;
4. Quantity Stored or Used (Total Volume / Amount);
5. Storage Location within the Workplace;
6. Relevant Hazard Classification;
7. Safety Data Sheet (SDS) Issue Date and Reference; and
8. Date of Entry and Person Responsible for maintaining the Record.

[Appendix A](#) of this IGN provides an example of a hazardous substance register and inventory template.

11.2 MAINTENANCE AND ACCESSIBILITY

The register should be maintained and kept up to date, particularly when there are changes to quantities, locations or hazard classifications. The register should be made **readily accessible** to persons at work who may be exposed to hazardous substances, and to those involved in emergency response or risk management activities.

The register may be maintained in hard copy or electronic format. Where electronic registers are used, workplaces should ensure that the information remains accessible during emergencies, including situations where electronic systems or power supplies are unavailable.

11.3 USE OF REGISTER & INVENTORY IN EMERGENCY PREPAREDNESS

Information contained in the hazardous substance register and inventory should also support emergency preparedness and response arrangements by enabling:

- identification of hazardous substances present in the workplace;
- awareness of storage locations and quantities; and
- timely access to relevant hazard and safety information.

Where appropriate, the location of the hazardous substance register or key information derived from it may be referenced within the workplace's emergency response arrangements to facilitate prompt and effective action during an incident.

12. LIFECYCLE MANAGEMENT OF HAZARDOUS SUBSTANCES

In a workplace, hazardous substance lifecycle management encompasses the key stages of **selection, transport, storage, handling and use, and disposal**. Each stage requires appropriate planning of risk management, the implementation of appropriate and suitable control

measures, emergency preparedness and response arrangements, and proper documentation, with the Safety Data Sheet (SDS) serving as the primary reference throughout the lifecycle.

The **hierarchy of controls should be applied throughout the lifecycle**, with priority given to higher-order controls, as shown in [Figure 1](#), where reasonably practicable.



Figure 4: Lifecycle Management of Hazardous Substances

Note: Although the lifecycle is presented sequentially for illustration, the stages are not necessarily linear. Depending on the nature and use of the hazardous substance, movement between stages may occur repeatedly or in a different order throughout its lifecycle.

12.1 SELECTION

The selection stage of hazardous substances provides an early opportunity to apply the hierarchy of controls before a hazardous substance is introduced into the workplace. Workplaces should first consider whether the use of the hazardous substance can be eliminated or where elimination is not reasonably practicable, whether it can be substituted with a less hazardous substance or process.

Where a hazardous substance is required, its GHS classification and relevant SDS information ([Section 6: Hazard Classification](#)) should be reviewed to understand its associated hazards and support the selection of an appropriate substance. In general, within the same GHS hazard class, the severity of the hazard decreases as the hazard category number increases (e.g. Category 1 represents a more severe hazard than Category 2) (refer to [Appendix B](#)).

The SDS containing health and safety information must be obtained from the manufacturer or supplier and reviewed before the hazardous substance is introduced into the workplace. Where applicable, workplaces shall also consider requirements imposed by other relevant authorities, particularly those related to the importation or use of hazardous substances.

Factors to consider when selecting hazardous substances include:

- Flammability (e.g. flash point);
- Fire and explosion hazards;
- Toxicity (e.g. lethal dose/concentration);
- Health effects (acute and chronic);
- Potential routes of exposure;
- Vapour pressure (volatility and inhalation risk);

- The quantity and concentration required;
- The availability of safer substances or processes;
- Applicable PELs;
- Compatibility with existing engineering controls, storage conditions and facilities as well as emergency arrangements.

12.2 TRANSPORT

For the purpose of this IGN, transport refers to the movement of hazardous substances within or outside the workplace, including loading, unloading, and transfer activities associated with workplace operations. The movement of hazardous substances should be planned and carried out in a manner that minimises risks to persons at work and others who may be affected.

Workplaces should ensure that:

- hazardous substances are transported in suitable, properly labelled, and secure containers;
- containers are protected against damage, leakage, or unintended release during transport;
- loading, unloading, and transfer activities are conducted using appropriate procedures, tools and PPE;
- relevant information, including Safety Data Sheets (**SDS**), is readily available where appropriate; and
- workers involved in transport-related activities are provided with suitable instruction, training, and supervision.

Where applicable, workplaces should comply with relevant requirements administered by the relevant authorities and may refer to recognised standards and guidance for the safe transport of hazardous substances (e.g. the United Nations Model Regulations on the Transport of Dangerous Goods).

12.3 STORAGE

Hazardous substances should be stored in accordance with the SDS, manufacturer recommendations, and any applicable technical requirements.

Storage arrangements should be suitable for the nature and quantity of hazardous substances present and should, where applicable:

- ensure hazardous substances are stored within their shelf-life and managed using appropriate stock rotation practices (e.g. first-in, first-out (FIFO));
- provide adequate ventilation and environmental conditions (e.g. temperature control);
- segregate incompatible substances to prevent unintended reactions;
- include suitable storage facilities, containers, shelving, and cabinet;

- incorporate secondary containment measures (e.g. bunds or drip trays) to contain leaks or spills;
- prevent unauthorised access and minimise exposure to ignition sources or other hazards; and
- be subject to regular inspection and maintenance to ensure continued integrity and effectiveness.

Examples of storage arrangements and secondary containment systems are provided in Figure 5 to Figure 6 and Table 4 for illustrative purposes only.



Figure 5: An example of drip trays used as secondary containment (drums). (ref: safespill.co.uk)



Figure 6: An example of drip trays used as secondary containment (mobile generator) (ref: essmag.co.uk)

Table 4: Examples of suitable and non-suitable containers for corrosive substances

SUITABILITY	MATERIAL
Suitable	 
Non-suitable	 

12.4 HANDLING & USE

Hazardous substances should be handled and used in a manner that minimises risks to the safety and health of persons at work. Prior to handling hazardous substances, workplaces shall ensure that relevant hazards are identified, appropriate risk control measures and safe work procedures are in place, and workers are provided with the necessary information, instruction, supervision and training.

During handling and use, workplaces shall implement appropriate risk control measures, including engineering controls, safe handling and grounding techniques, good housekeeping and use of suitable personal protective equipment (PPE), where required. PPE should be properly fitted, and be used in accordance with the manufacturer's instructions. For further guidance on PPE selection, fit, maintenance, and storage, refer to IGN 04/2021: Guidance on Personal Protective Equipment (PPE).

Contaminated equipment, materials and work areas should be appropriately cleaned and maintained, and hazardous waste and contaminated PPE should be properly managed and disposed of. Incidents, spills, near misses, equipment defects and other abnormal conditions should be reported and managed in accordance with workplace procedures.

12.5 DISPOSAL AND WASTE MANAGEMENT

Hazardous substances that are no longer required in a workplace should be disposed of in a manner that **eliminates or minimises risks to the safety and health of persons at work**. Disposal arrangements should also take into account the foreseeable secondary risks arising from storage, handling, transport and interim retention of hazardous waste within the workplace.

Containers that previously held hazardous substances should be **appropriately identified, treated as hazardous waste where applicable**, and managed in accordance with established workplace procedures to prevent inadvertent exposure, misuse or contamination prior to disposal.

12.5.1 DISPOSAL PLANNING AND CONTROL MEASURES

Workplaces should establish procedures for the management and disposal of hazardous waste generated from workplace activities. These procedures should be proportionate to the type and quantity of hazardous waste involved and should address, where applicable:

- identification and classification of hazardous waste generated;
- handling and temporary storage of contaminated containers and materials;
- suitability and integrity of containers used for hazardous waste;
- segregation of hazardous waste to prevent incompatible reactions;
- designation of waste holding or disposal areas within the workplace;
- provision and use of appropriate PPE;
- methods of treatment or disposal; and
- interim retention controls, including storage duration limits, secondary containment, security and monitoring.

The focus of these measures is to ensure that hazardous waste is **managed safely within the workplace** prior to removal, so as to prevent exposure or harm to persons at work.

12.5.2 OFF-SITE DISPOSAL AND EXTERNAL REQUIREMENTS

Final disposal of hazardous waste should be carried out by **waste collection services specialised in handling hazardous waste, approved by the Department of Environment, Parks and Recreation (JASTRe), Ministry of Development**, and transported to waste disposal facilities authorised to receive, process and treat

hazardous waste. Where required, relevant information such as the SDS should be made available to the waste collection service or disposal facility to support safe handling.

While the management of hazardous waste disposal is regulated by environmental authorities, workplaces should ensure that their disposal arrangements **do not introduce safety and health risks to persons at work**, including during interim storage, loading and transfer activities.

12.5.3 SEGREGATION AND SPECIAL CIRCUMSTANCES

Hazardous wastes should be segregated by waste type (e.g. chemical waste, oily waste, contaminated PPE or rags, spent containers, laboratory waste) to prevent cross-contamination and unintended reactions within the workplace.

Where hazardous waste is intended for disposal outside Brunei Darussalam, workplaces should ensure that such activities are carried out in accordance with the requirements JASTRe.

13. EMERGENCY PREPAREDNESS AND RESPONSE

Workplaces where hazardous substances are used, handled or stored shall make appropriate arrangements to prepare for and respond to foreseeable emergency situations arising from hazardous substance incidents, in order to protect the safety and health of persons at work.

Emergency preparedness and response under this IGN focus on workplace-level arrangements and are intended to complement, and not replace or override, emergency response requirements imposed by other relevant authorities.

13.1 HAZARDOUS SUBSTANCE SPILL PREPAREDNESS

Workplaces should establish procedures for managing accidental spills or releases of hazardous substances that may occur during workplace activities in accordance with the SDS. These procedures should be communicated to workers who may be involved in, or affected by, such incidents.

Appropriate spill response equipment, including hazardous substance spill kits, should be provided and made readily accessible where hazardous substances are used, handled or stored. The type and extent of spill response equipment should be **commensurate with the nature and quantity of the hazardous substances present**.

Workers who may be required to respond to spills should receive suitable instruction and training on the use of spill response equipment and the actions to be taken to protect their safety and health.

Examples of spill response equipment may include suitable absorbent materials, waste collection bags or containers, clean-up tools, personal protective equipment (PPE), and hazardous waste labels. **Illustrative examples (not exhaustive) are provided in Figures 7 to 12 for reference only.**

- I. Universal hazardous material absorbent pads/powder as shown in Figure 7:
 - a) High capacity;
 - b) Hazardous material inert;
 - c) Absorbs aggressive hazardous materials as well as non-aggressive compounds such as water;
 - d) Good for all hazardous substances; acids, bases, flammable liquids, formaldehyde.

Also acceptable where compatible is dry sand, vermiculite, diatomaceous earth, or commercial loose absorbent granules may be used to dike, dam or absorb spills particularly larger floor releases, provided they do not react with the substance spilled and workers are trained in their use.



Figure 7: Examples of absorbent pads/powder

- II. Polyethylene bags as shown in Figure 8:
 - a) Strong construction;
 - b) Leak proof;
 - c) At least 26 L capacity;
 - d) 4 mm in thickness.



Figure 8: Examples of polyethylene bag

III. Anti-static polypropylene plastic scoop as shown in Figure 9:



Figure 9: Example of polypropylene plastic scoop

IV. Nitrile/silver shield combination gloves as shown in Figure 10:

- a) 0.011-inch thick nitrile gloves under silver shield gloves;
- b) At least two (2) pairs each.



Figure 10: Examples of nitrile and silver shield gloves

- V. Two (2) pairs of indirect venting hazardous material splash goggles as shown in Figure 11:



Figure 11: Examples of splash goggles

- VI. Hazardous waste labels as shown in Figure 12:



Figure 12: Example of a hazardous waste label

13.2 EMERGENCY SHOWERS AND EYE WASH FACILITIES

Where there is a risk of exposure to toxic or corrosive substances that may cause injury through skin or eye contact, workplaces shall provide suitable emergency showers and eyewash facilities in accordance with the WSH (First-Aid) Regulations. Such facilities should be:

- readily accessible within the work area;
- clearly identified; and
- properly maintained to ensure functionality when required.

Emergency showers and eyewash facilities form part of the workplace's emergency preparedness arrangements and should be included in worker training and familiarisation activities.

13.3 EMERGENCY RESPONSE PLANNING

As required under Section 12(3)(d) of the WSHA, Cap 277, employers are required to develop and implement procedures for dealing with emergencies that may arise at work, including emergencies involving hazardous substances. Appropriate emergency response arrangements shall be established and maintained to protect persons at work and enable an effective response to such incidents.

This IGN provides guidance on preparing for reasonably foreseeable hazardous substance incidents, such as spills, leaks, fires or accidental exposure, and does not replace or supersede emergency response requirements imposed by other relevant authorities.

The nature and extent of emergency response planning should be commensurate with the type, quantity and hazardous properties of the substances present, as well as the scale and complexity of workplace activities. The level of planning should be proportionate to the risks involved.

Where applicable to the workplace, the ERP may include:

- identification of potential hazardous substance emergency scenarios relevant to the workplace;
- arrangements for alerting and safeguarding persons at work;
- clearly defined roles and responsibilities for initial on-site response and evacuation;
- availability and accessibility of emergency equipment relevant to hazardous substance incidents (such as spill kits, emergency showers and eyewash stations);
- arrangements for contacting external emergency services when escalation is required; and
- training and periodic emergency drills and table-top exercises to test preparedness.

Emergency response arrangements should be reviewed periodically, and following any hazardous substance incident, significant change in the substances used, or changes to work processes that may affect emergency preparedness.

13.4 REPORTING OF INCIDENTS AND OCCUPATIONAL DISEASES

Incidents involving hazardous substances at the workplace, including spills, leaks, exposures, fires or dangerous occurrences, shall be reported in accordance with the WSH (Incident Reporting) Regulations and the WSH (Facilities) (COMAH) Regulations through SHENA's online reporting portal: <https://shena.gov.bn/incident-reporting-form>. Depending on the nature and severity of the incident, notifications to other relevant authorities may also be required in accordance with applicable laws administered by those authorities.

Where a worker is diagnosed with an occupational disease listed under **Schedule 3 of the WSHA, Cap 277** the employer and registered medical practitioner, or Designated Workplace Doctor (DWD), must report the case to SHENA in accordance with the **WSH (Incident**

Reporting) Regulations. Further guidance on occupational disease reporting obligations may be found in relevant Notices to Industry issued by SHENA:

- [2023/NTI/11: DUTY OF REGISTERED MEDICAL PRACTITIONER TO REPORT OCCUPATIONAL DISEASES AND REPORTING PATHWAY](#)
- [2025/NTI/01: COMMENCEMENT OF REGISTRATION OF DWD](#)

14. TOXIC SUBSTANCE EXPOSURE MONITORING

Toxic substance exposure monitoring at the workplace shall be conducted where risk assessments indicate that workers may be exposed to toxic substances (i.e. one of the 17 classes of general hazardous substances under Schedule 5, Part 2, Division 1 of the WSHA, Cap 277) at levels that could adversely affect their safety or health, or where there is uncertainty about the adequacy of existing control measures.

Toxic substances are substance that can cause harm through inhalation, ingestion, or contact with the skin or eyes. These include substances specified under **Schedule 1 of the WSH (General Provisions) Regulations** for which workplace exposure monitoring shall be conducted to determine workers' exposure levels.

The occupier of the workplace shall ensure that workers are not exposed to toxic substances above the PELs specified in **Schedule 1 of the WSH (General Provisions) Regulations**.

14.1 PURPOSE OF EXPOSURE MONITORING

Exposure monitoring is carried out to:

- determine the level of exposure of persons at work to hazardous substances;
- assess whether exposure levels are adequately controlled;
- verify compliance with applicable PEL, where prescribed under WSHA, Cap 277 and its subsidiary regulations;
- support the selection, review and improvement of control measures; and
- inform decisions on the need for health surveillance.

Exposure monitoring forms part of a broader risk management approach and should not be used as a substitute for effective hazard elimination or control.

‘Long Term PEL’ is the PEL over an eight (8) hour working day and a forty (40) hour work week. While the ‘Short Term PEL’ is the PEL over a fifteen (15) minute period during any working day.

To minimise and control exposures above PEL, the following mandatory control measures shall be taken, as required under Regulation 39(2) of the [WSH \(General Provisions\) Regulations](#):

Table 5: Examples of Control Measures for Toxic Substances

CONTROL MEASURES	ILLUSTRATION (NOT EXHAUSTIVE)
(a) Carrying out the process or work in isolated areas where persons not connected with the process or work are prohibited from being present;	 Paint mixing in a restricted, ventilated room away from other workers (Stock Image – reference illustration from Shutterstock)
(b) Carrying out the process or work in closed vessels or systems to prevent persons at work in the workplace from encountering the toxic dust, fumes, or other contaminants;	 Handling hazardous substances inside a sealed glove box to fully isolate workers from toxic or reactive chemicals. (Stock Image – reference illustration from Shutterstock)
(c) Providing adequate ventilation to dilute the toxic dust, fumes, or other contaminants;	 A workshop where solvents are used with large mechanical fans and ducts to dilute vapours and maintain safe air quality (Stock Image – reference illustration from Shutterstock).

(d) Providing local exhaust ventilation to remove the toxic dust, fumes, or other contaminants at their sources of emission; and	 A welding station equipped with a flexible extraction arm positioned next to the welding arc, capturing fumes (Stock Image – reference illustration from Shutterstock).
(e) Carrying out the process or work wet.	 Cutting concrete using water suppression blades so that silica dust does not become airborne (Stock Image – reference illustration from Shutterstock).

The local exhaust ventilation (LEV) mentioned above shall be designed and maintained so that the toxic dust, fumes, or other contaminants are safely and effectively removed at the source of generation and are not dispersed or scattered in the surrounding area. If the toxic dust or waste is found accumulating on the floors, walls, work benches or other surfaces, then the method of removal shall be by washing, vacuum cleaning or other suitable means that avoid the toxic dust from becoming airborne.

14.2 CONDUCT OF EXPOSURE MONITORING

Where exposure monitoring is required, it shall be carried out by a **competent person** with appropriate training, experience and knowledge of occupational exposure assessment and the hazardous substances involved. Ref: [2024/NTI/09: Minimum Requirements of Competent Person to Monitor, Test or Assess the Environment of any Workplace for any Potential Health Hazard](#).

The extent, frequency and method of exposure monitoring should be **commensurate with the level of risk**, taking into account:

- the hazardous properties of the substances used;
- the nature of work activities and processes;
- duration and frequency of exposure;
- existing control measures; and
- previous monitoring or incident history.

Exposure monitoring results should be documented and communicated to relevant parties, including workers who may be affected, in a manner that supports understanding and appropriate follow-up actions.

14.3 REVIEW AND USE OF MONITORING RESULTS

The results of exposure monitoring should be used to:

- evaluate the effectiveness of existing control measures;
- identify areas where additional or improved controls may be required;
- inform reviews of risk assessments; and
- support decisions on the need for or review of health surveillance.

Where monitoring results indicate that exposure levels may exceed applicable limits or pose a risk to health, workplaces should take prompt action to review and strengthen control measures.

Exposure monitoring should be reviewed periodically and when there are significant changes to substances used, work processes, control measures, or information on hazards and exposure becomes available.

15. HEALTH SURVEILLANCE (MEDICAL EXAMINATION)

Health surveillance is the systematic monitoring of workers' health to detect early signs of ill health caused by exposure to workplace hazards.

Health surveillance is an important component of the workplace safety and health management where exposure to hazardous substances may give rise to adverse health effects on persons at work. It is intended to support the early detection of work-related ill-health, verify the effectiveness of controls measures, and inform improvements to workplace risk management practices.

Health surveillance in the form of medical examination should be considered where a risk assessment identifies that workers may be exposed to hazardous substances that can cause specific or identifiable adverse health effects, particularly where **workplace exposure monitoring indicates significant or elevated exposure**, or where monitoring of health outcomes is reasonably practicable and beneficial. Health surveillance may include:

- Pre-employment, periodic, and post-employment medical examinations of workers;
- Biological monitoring (where relevant to the substance and exposure route); and
- Review of symptoms, exposure history and work activities.

Health surveillance should be carried out by [a SHENA Registered Designated Workplace Doctor \(DWD\)](#).

15.1 ROLE OF HEALTH SURVEILLANCE IN RISK MANAGEMENT

Health surveillance forms part of the workplace's overall risk management system and should be implemented, where appropriate, **in conjunction with toxic substances exposure monitoring and other risk control measures**. Findings from risk assessments and exposure monitoring should be considered in determining the need and appropriate scope of health surveillance.

Health surveillance should not be used to solely eliminate or control workplace hazards. Workplaces should first implement a hierarchy of controls to minimise workers' exposure. Findings from health surveillance should be used to:

- review the adequacy and effectiveness of existing control measures;
- identify the need for additional or improved risk controls; and
- inform workplace safety and health management decisions.

Where health surveillance is required, employers should:

- identify workers who are subject to health surveillance, based on risk assessment findings;
- ensure health surveillance is conducted at appropriate intervals, in consultation with the DWD;
- act on recommendations arising from health surveillance reports to improve workplace controls;
- maintain confidential records of health surveillance in accordance with applicable requirements; and
- inform workers of relevant results and any follow-up actions required.

16. EFFECTIVE MANAGEMENT OF HAZARDOUS SUBSTANCES

Effective management of hazardous substances is achieved when hazards are properly identified, risks are assessed and controlled, workers are adequately trained and informed, emergency arrangements are in place, and systems are periodically reviewed and improved.

Workplaces are encouraged to use this IGN holistically, rather than applying its provisions in isolation, to support a systematic and sustainable approach to hazardous substance management.

17. REFERENCES

- Enterprise Singapore. (2019). *Singapore Standard SS 651:2019: Safety and health management system for the chemical industry – Requirements with guidance for use*. Singapore Standards Council.
- Genetic Alliance, & District of Columbia Department of Health. (2010). *Understanding genetics: A District of Columbia guide for patients and health professionals* (Appendix D – Teratogens/Prenatal Substance Abuse). Genetic Alliance.
- International Labour Organization. (1985). *Convention No. 161 – Occupational health services*.
- International Labour Organization. (1990). *Convention No. 170 – Chemicals Convention, 1990*. International Labour Office.
- International Labour Organization. (1990). *Recommendation No. 177 – Chemicals Recommendation, 1990*.
- International Labour Organization. (1993). *Safety in the use of chemicals at work: An ILO code of practice*.
- International Labour Organization. (2007). *Background information for developing an ILO policy framework for hazardous substances*.
- National GHS Task Force. (2014). *Globally harmonized system of classification and labelling of chemicals (GHS)*. Singapore.
- Occupational Safety and Health Administration. (n.d.). *United States Department of Labor OSHA resources on hazardous substances*. U.S. Department of Labor.
- Safe Work Australia. (2023). *Code of practice: Managing risks of hazardous chemicals in the workplace*.
- Safety, Health and Environment National Authority. (2022). [2022/IGN/02\(01\): Requirements of Workplace Safety and Health Officer & Workplace Safety and Health Co-Ordinator](#).
- Safety, Health and Environment National Authority. (2022). [2022/WSHN/03: Risks Associated with Filling Portable Jerry Cans and External Containers with Liquid Fuel at Petrol Service Stations](#).
- Safety, Health and Environment National Authority. (2023). [2023/NTI/11: Duty of Registered Medical Practitioner to Report Occupational Diseases and Reporting Pathway](#)
- Safety, Health and Environment National Authority. (2024). [2024/NTI/09: Minimum Requirements of Competent Person to Monitor, Test or Assess the Environment of any Workplace for any Potential Health Hazard](#).
- Safety, Health and Environment National Authority. (2025). [2025/NTI/01: Commencement of Registration of DWD](#)
- Safety, Health and Environment National Authority. (2025). [Code of Practice: Workplace Safety and Health \(WSH\) Risk Management](#)
- United Nations. (2017). *Globally harmonized system of classification and labelling of chemicals (GHS)* (7th rev. ed.). United Nations.
- United Nations Economic Commission for Europe. (2023). *Recommendations on the transport of dangerous goods: Model regulations* (23rd rev. ed.). United Nations. <https://digitallibrary.un.org/record/4066022>

- Workplace Safety and Health Act, Chapter 277
- Workplace Safety and Health (First-Aid) Regulations.
- Workplace Safety and Health (General Provisions) Regulations.
- Workplace Safety and Health (Incident Reporting) Regulations.
- Workplace Safety and Health (Risk Management) Regulations.
- Workplace Safety and Health (Workplace Safety and Health Officers) Regulations.
- Workplace Safety and Health Council Singapore. (2011). *Workplace safety and health guidelines: Management of hazardous chemicals programme*. https://www.tal.sg/wshc/-/media/tal/wshc/resources/publications/wsh-guidelines/files/wsh_guidelines_mhcp.pdf
- Workplace Safety and Health Council Singapore. (2014). *Globally Harmonised System of Classification and Labelling of Chemicals (GHS): Singapore*. https://www.tal.sg/wshc/-/media/TAL/Wshc/Resources/Publications/Others/Files/GHS_Booklet.pdf

18. APPENDICES

APPENDIX A: HAZARDOUS SUBSTANCE REGISTER AND INVENTORY LIST TEMPLATE – EXAMPLE

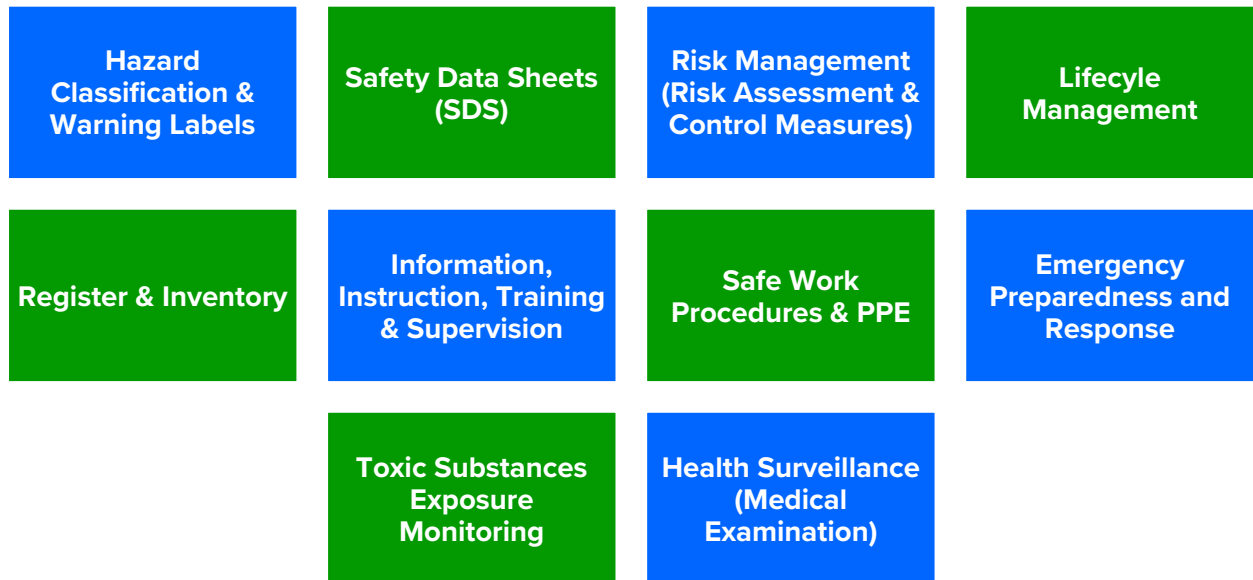
NO.	CHEMICAL NAME	CAS NUMBER	SUPPLIER/ MANUFACTURER INFO	QUANTITY STORED	STORAGE LOCATION	HAZARD CLASSIFICATION (GHS)	SDS ISSUE DATE & REFERENCE	DATE OF ENTRY & PERSON RESPONSIBLE
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

APPENDIX B: GHS CLASSIFICATION AND LABELLING SUMMARY TABLES

HAZARD TYPES	HAZARD CLASSES	HAZARD CATEGORIES
PHYSICAL HAZARD	▪ Explosives	Divisions 1.1 to 1.6
	▪ Flammable gases	Categories 1 and 2
	▪ Flammable aerosols	Categories 1 and 2
	▪ Oxidising gases	Category 1
	▪ Gases under pressure	Compressed gas; liquefied gas; refrigerated liquefied gas; dissolved gas
	▪ Flammable liquids	Categories 1 to 4
	▪ Flammable solids	Categories 1 and 2
	▪ Self-reactive substances	Types A to F
	▪ Pyrophoric liquids	Category 1
	▪ Pyrophoric solids	Category 1
	▪ Self-heating substances	Categories 1 and 2
	▪ Substances which, on contact with water, emit flammable gases	Categories 1 to 3
	▪ Oxidising liquids	Categories 1 to 3
	▪ Oxidising solids	Categories 1 to 3
	▪ Organic peroxides	Types A to F
	▪ Corrosive to metals	Category 1

HAZARD TYPES	HAZARD CLASSES	HAZARD CATEGORIES
HEALTH HAZARD	Acute toxicity (oral, dermal and inhalation)	Categories 1 to 5
	Skin corrosion/irritation	Categories 1A, 1B, 1C and 2
	Serious eye damage/eye irritation	Categories 1 and 2A
	Respiratory sensitizer	Category 1
	Skin sensitizer	Category 1
	Mutagenicity	Categories 1A, 1B and 2
	Carcinogenicity	Categories 1A, 1B and 2
	Toxic to reproduction	Categories 1A, 1B and 2
	Specific Target organ toxicity following single exposure	Categories 1 and 2
	Specific Target organ toxicity following repeat exposure	Categories 1 and 2
	Aspiration hazard	Categories 1 and 2
ENVIRONMENTAL HAZARD	Acute hazards to the aquatic environment	Category 1
	Chronic hazards to the aquatic environment	Categories 1 and 2

APPENDIX C: KEY ELEMENTS IN MANAGING GENERAL HAZARDOUS SUBSTANCES IN THE WORKPLACE





+673 238 2000



www.shena.gov.bn



[@shena.gov.bn](https://www.instagram.com/shena.gov.bn)



t.me/SHENAbn