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SPREP
Secretariat of the Pacific Regional Environment Programme

PacWastePlus
PACIFIC WASTE MANAGEMENT

This initiative is supported by **PacWastePlus**-a 72 month project funded by the European Union (**EU**) and implemented by the Secretariat of the Pacific Regional Environment Programme (**SPREP**) **to sustainably and cost effectively improve regional management of waste and pollution.**

Personal Protective Equipment:

GUIDANCE FOR WASTE MANAGEMENT WORKERS IN PACIFIC ISLAND COUNTRIES

January 2022

The information presented in this publication summarizes international best practices. In case of a conflict in interpretation, the country's actual policies and regulations in which PPE is to be worn should apply.

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Our vision: A resilient Pacific environment sustaining our livelihoods and natural heritage in harmony with our cultures.

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PacWastePlus Programme

The Pacific – European Union (EU) Waste Management Programme, PacWastePlus, is a 72-month programme funded by the EU and implemented by the Secretariat of the Pacific Regional Environment Programme (SPREP) to improve regional management of waste and pollution sustainably and cost-effectively.

About PacWastePlus

The impact of waste and pollution is taking its toll on the health of communities, degrading natural ecosystems, threatening food security, impeding resilience to climate change, and adversely impacting social and economic development of countries in the region. The PacWastePlus programme will generate improved economic, social, health, and environmental benefits by enhancing existing activities and building capacity and sustainability into waste management practices for all participating countries.

Countries participating in the PacWastePlus programme are: *Cook Islands, Democratic Republic of Timor-Leste, Federated States of Micronesia, Fiji, Kiribati, Nauru, Niue, Palau, Papua New Guinea, Republic of Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu*.

KEY OBJECTIVES

Outcomes & Key Result Areas

The overall objective of PacWastePlus is "to generate improved economic, social, health and environmental benefits arising from stronger regional economic integration and the sustainable management of natural resources and the environment".

The specific objective is "to ensure the safe and sustainable management of waste with due regard for the conservation of biodiversity, health and wellbeing of Pacific Island communities and climate change mitigation and adaptation requirements".

Key Result Areas

- **Improved** data collection, information sharing, and education awareness
- **Policy & Regulation** - Policies and regulatory frameworks developed and implemented.
- **Best Practices** - Enhanced private sector engagement and infrastructure development implemented
- **Human Capacity** - Enhanced human capacity

Learn more about the PacWastePlus programme by visiting

https://pacwasteplus.org/

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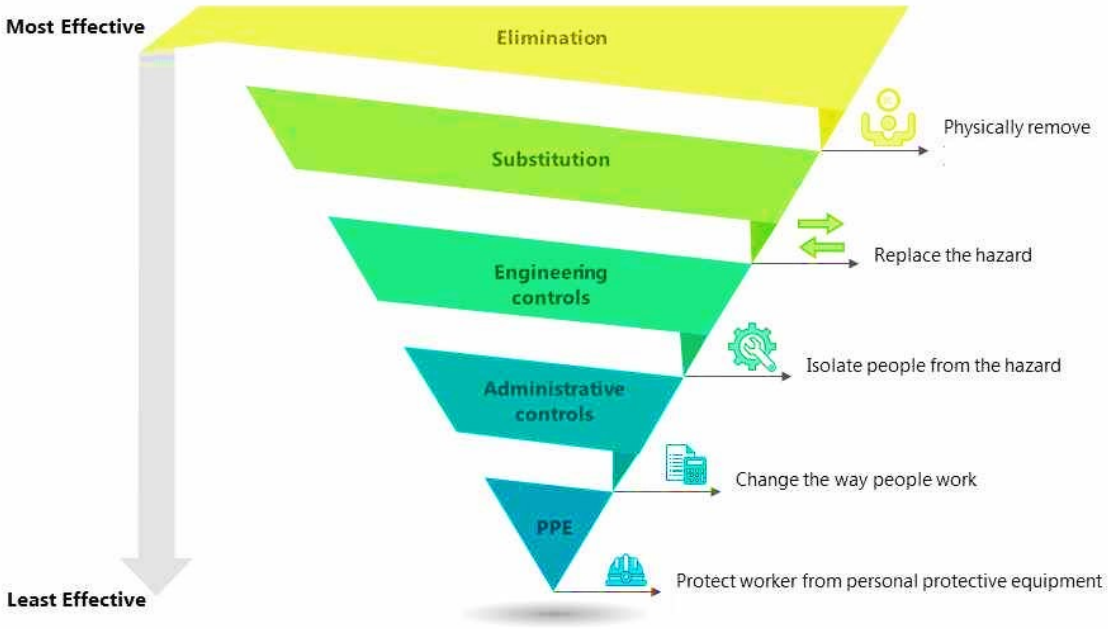
PacWastePlus
PACIFIC WASTE MANAGEMENT

Introduction

To appropriately manage waste, workers will come in contact with many materials that could be hazardous to their health, as such, a variety of Personal Protective Equipment (PPE) has been designed to provide the necessary protection for them and their co-workers. The more potentially hazardous the material, the greater the need for PPE.

PPE is the 'last line of defence' and should be used in conjunction with stringent work procedures and controls that limit exposure to hazardous substances. It is likely that workers will come into contact with hazardous substances during their use, transport, or disposal, as such the implementation of controls, procedures and the use of PPE are required to protect workers from any health and safety impacts.

PPE refers to equipment or gear designed to be worn or used to protect the body from severe injuries and illnesses. It reduces workers' exposure to workplace hazards resulting from chemicals, physical, airborne, or other workplace hazards. In this context, depending on the type of hazard involved, PPE may include gloves, safety glasses, protective shoes, respirators (i.e., N95 or more protective respirators), coveralls, full bodysuits, and much more. There are a number of ways to control the risks associated with hazardous materials. Some control measures are more effective than others. Control measures can be ranked from the highest level of protection and reliability to the lowest. This ranking is known as the **hierarchy of control**:



Source: https://www.cdc.gov/niosh/topics/hierarchy/default.html

- **Engineering Controls** prevent exposure by eliminating hazards from the workplace or substituting hazardous materials with less hazardous ones. Engineering controls include using physical barriers or modifying plants, equipment, ventilation systems, and processes to reduce the source of exposure.
- **Administrative Controls** reduce the magnitude or time of exposure by work timing, policies and other rules, appropriate infrastructure, and standard operating procedures (including training, housekeeping, equipment maintenance, and personal hygiene practices).
- **Work Practice Controls** reduce worker exposure to hazardous substances by ensuring workers perform their tasks to specific procedures that will reduce or manage exposure. Work Practice Controls will include the use of PPE when directly interacting with hazardous substances.
- **PPE** is commonly used to minimize exposure to various chemical and physical hazards. It is one of the least effective control measures and must only be considered after applying higher level measures. The protection of workers requires a combination of controls, and PPE should be the last line of control.

Ensure a Safe and Healthful Working Environment

Cooperative efforts from employers and employees are essential to ensure occupational health and safety measures are followed when working with hazardous substances.

The summary of PPE program content below presents specific requirements (recommended by the Canadian Centre for Occupational Health and Safety) for both employers and employees to follow to ensure a safe and healthful working environment:

- **If a Hazard Exists and Warrants the use of PPE – Employer must**:
  - Undertake a Hazard Assessment and determine the level of PPE required.
  - Provide PPE to employees/workers.
  - Train workers to use and care for PPE.
  - Maintain, or replace worn or damaged PPE.
  - Regularly review, update, and evaluate the effectiveness of PPE program

- **Employees or Workers should:**
  - Properly wear PPE
  - Attend PPE training
  - Care, clean, and maintain PPE
  - Inform Supervisor of the need to repair or replace PPE

(***Sources**: Canadian Centre for Occupational Health and Safety (CCOHH). https://www.ccohs.ca/oshanswers/prevention/ppe/designin.html; Graphic Products. https://www.graphicproducts.com/articles/choosing-ppe-to-protect-against-poisons-in-the-workplace/)*

The International Labour Organisation (ILO) supports both employers and workers to share responsibility concerning safety and health in the workplace. This is addressed under the ILO's Occupational Safety and Health Convention 1981 (No. 155), of which Australia, New Zealand and Fiji are countries in the Pacific region that have ratified the convention.

Australia and New Zealand have Workplace Exposure Standards (WES), which are guidelines to minimise health risk and level of exposure to hazardous substances. Some countries have adopted the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), which classifies chemicals by types of hazards and proposes harmonized hazard communication elements, including labels and safety data sheets.

Legislation on management of hazardous materials or substances usually comes under Occupational Safety and Health (OSH) legislation. Under OSH laws, the responsibility to keep people in the workplace safe belongs to:

- a person conducting a business or undertaking (PCBU), such as an employer
- an officer, such as a business owner or CEO
- worker or another person in the workplace

A good PPE program considers the hazards, conducts a risk assessment, evaluates all possible control methods, integrates various approaches, and re-examines the controls frequently to make sure that the hazard continues to be controlled.

Effective PPE programs involve the engagement of management, supervisors, and workers in planning, development, and implementation of the program.

Types of Hazardous Materials

Hazardous materials can be classified as **flammable, corrosive, reactive, a health hazard**, and particularly hazardous substances.

Hazardous materials commonly known as **HAZMAT** refer to products that contain dangerous properties that could cause harm to human health and the environment.

Oil, Fuels, and Flammable solids and liquids

Automotive and Marine Batteries

Solvents, Acids, and Paint

Compressed Gas Cylinders

Commercial and Household items that may contain Hazardous substances

End-of-life Electronic Devices

Health care waste (from pharmaceuticals, patient specimens, used syringes)

Pesticide and Chemical Containers

Asbestos-containing materials (from building/construction materials)

Exposure to hazardous materials could result in:

- Poisoning
- Irritation
- chemical burns
- sensitisation
- cancer
- birth defects, or
- diseases of certain organs such as the skin, lungs, liver, kidney, and nervous system

Table 1 describes the various characteristics and safety rules for managing hazardous wastes generated by health care facilities, disaster events, and specific hazardous wastes generated from the use of electronic goods, and asbestos.

Table 1: Hazardous Waste Safety Guide

Hazardous Waste Streams	Class (flammable/corrosive /reactive/health & environment hazard/ particularly hazardous)	Storage	Hazard	PPE Level (Linked to Table 2)
Healthcare waste (HCW)	Health hazard	Segregate types of HCW in storage. Secure storage in well ventilated stockroom.	Infectious	Use Level B/C PPE.
	Particularly Hazardous	▪ Develop Standard Operating Procedure's (SOP). ▪ Establish a designated storage area. ▪ Establish decontamination and emergency response procedures.	Radioactive and Reproductive toxins	Use Level A/B PPE.
Disaster waste (containing elements of hazardous substances)	Flammable	Segregate storage	Ignite easily and burn rapidly	Use Level B/C PPE.
	Corrosive	Store away from flammable reactive, and health hazards	Causes tissue damage on contact	
	Environment hazard	Segregate storage	Hazardous to the aquatic environment	
Electronic waste	Health and Environment hazard	Secure storage in well-ventilated stockroom.	It can be toxic to both the human and aquatic environment.	Use Level C/D PPE.
Asbestos and ACM	Particularly hazardous	▪ Develop SOP. ▪ Designated storage area. ▪ Decontamination and emergency response procedures.	Carcinogen	Use Level A/B PPE.

Important Note: Hazardous waste streams (depending on their present state) can present a high-to-low risk level. Therefore, while this table can be used as a guide, a hazard assessment at the worksite is critical to determine the correct PPE level required, as stated in **Table 2.**

Types of PPE

All workers handling **HAZMAT** must wear the appropriate level of PPE as necessary to prevent health and safety issues to themselves, or others. It is the responsibility of the employer to undertake a hazard assessment of the various tasks required.

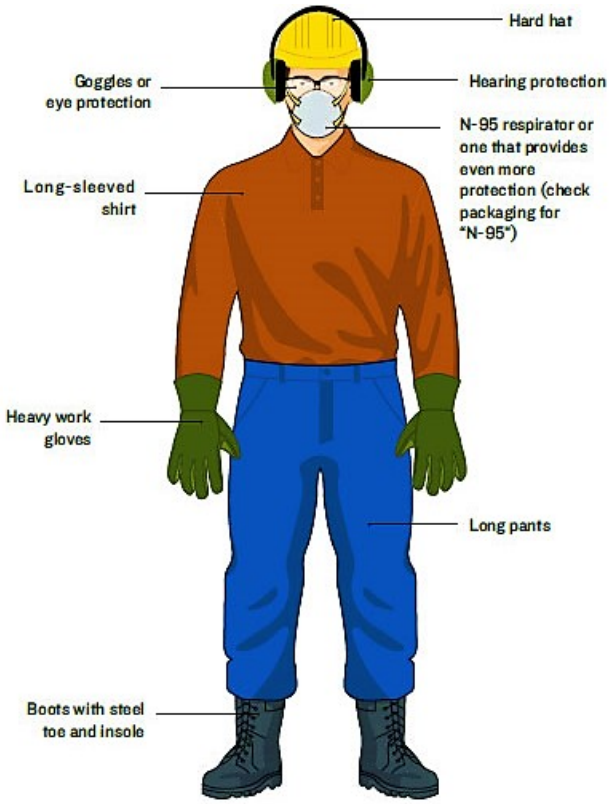
A hazard assessment is designed to identify physical hazards of the worksite, as well as the hazards associated with carrying out specific activities. The required PPE will be determined by the specific hazards present in a location or related to a specific activity. In many cases, the type of PPE may be predetermined based on the chemical procedures stated by the employer (e.g., hospitals and laboratories), or manufacturers of hazardous materials (Material Safety Data Sheet supplied with chemicals and hazardous substances).

In general, PPE should be considered for protection in three distinct areas:

- Respiratory protective equipment (RPE) – to prevent exposure to harmful substances through inhalation and ingestion.
- Chemical protective clothing (CPC) – to prevent exposure through skin contact and penetration.
- Protection against other foreseeable hazards (mechanical), for example, fire, extreme heat or cold or projectiles.

Standard PPE for Low-Level Hazardous Waste Operations

Typical protective clothing and gear worn by workers undertaking various hazardous waste operations (*e.g., workers clearing up after a disaster or collecting waste oil and other potential waste materials for storage or disposal*) is shown below. Standard PPE includes both PPE for HAZMAT and general protection and should be modified according to the hazard encountered.



PPE for Low-Hazard Waste Operations:

- Proper gloves (hand protection) – from direct contact with dangerous liquids, chemicals
- Boots (feet protection) – electrical hazards and sharp or hot objects
- Respirator (respiratory protection) – from inhaling particulates, vapors or gases
- Goggles (eye protection) – acids or caustic liquids

PPE for general protection:

- Helmet - head protection
- Muffs - hearing protection
- Long pants and sleeved shirt - skin protection

PPE for Asbestos Abatement

When working with asbestos-containing materials (ACM), controls must be implemented to reduce exposure. Workers who handle, transport, and dispose of ACM must wear appropriate PPE to further reduce asbestos risks.

Below is an example of full body PPE worn by ACM abatement workers.

PPE for safely handling asbestos:

- Respirator – to avoid inhaling asbestos fibers. There are different types of respirators (disposable half-face, re-usable half-face, full-face respirator, and full-face powered respirators), and it is important to select the respirator based on the activities being undertaken.
- Non-foggy goggles – if it's not part of the respirator, a positive-pressure air supply hood may be worn too.
- Disposable Coveralls – to avoid carrying asbestos fibers from the site.
- Footwear – ideal to wear disposable boot covers to avoid carrying asbestos fibres.

What Level of PPE Protection is Needed?

A hazard assessment is critical to inform the selection of PPE for any given location and/or task. It is critical that periodically reviews of the hazardous assessment be done while work is ongoing to account for any changes in conditions that may warrant the need to upgrade or downgrade the level of PPE required.

Table 2 describes four categories of PPE protection levels (identified by OSHA) which may be of assistance when determining the necessary PPE requirements for working with hazardous materials.

Table 2: PPE selection processes

Levels – Risk Present	Risk description and examples	Level of PPE protection required
A - HIGH	Highly hazardous environment in which the highest level of skin, respiratory, and eye protection is required. These risks may include exposure to gases, vapours, fibres, or chemical splashes. ***Examples***: • Pulling off friable asbestos-containing materials (high risk of exposure to fibres) from the roof/walls. • Entering a confined HAZMAT area where a permit is required.	• Positive pressure, full face, self-contained breathing apparatus (SCBA) or positive pressure supplied-air respirator with escape SCBA, approved by the National Institute for Occupational Safety and Health (NIOSH). • Fully encapsulating, chemical-protective bodysuit. • Disposable protective suit which may be worn over encapsulating bodysuit. • Steel-toe boots that are chemical-resistant. • Gloves with inner and outer layers that are chemical-resistant. ***Optional***: • Hard hat under suit. • Coveralls • Long underwear
B - MEDIUM	Medium level hazardous environment in which the highest level of respiratory protection is still required, but a lesser level of skin protection is necessary. ***Example***: Undertaking hazard assessment to perform initial site characterization and analysis.	• Positive pressure, full face self-contained breathing apparatus or respirator (NIOSH approved). • Hooded chemical protective clothing (overalls and long-sleeved jacket; coveralls; one or two-piece chemical-splash suit; disposable chemical-resistant overalls). • Gloves with inner and outer layers that are chemical-resistant. • Steel-toe boots that is chemical-resistant. ***Optional***: • Hard hat • Coveralls • Boot covers that is chemical-resistant • Face shield
C - LOW	Low-level hazardous environment in which the concentration and type of airborne substance is measurable. There is a reduced likelihood of exposure to the skin and eyes.	• Full- or half-face mask channelling air from a respirator. • Hooded chemical protective clothing (overalls; two-piece chemical-splash suit; disposable chemical-resistant overalls).

Levels – Risk Present	Risk description and examples	Level of PPE protection required
	Example: Workers undertaking disaster debris clearing or including waste oil collection. It applies to most hazardous waste operations and emergency response work.	• Gloves with inner and outer layers that are chemical-resistant. ***Optional***: • Hard hat • Coveralls • Steel-toe boots that is chemical-resistant. • Boot covers that is chemical-resistant • Face shield • Escape mask
D - MINIMUM	Least level hazardous environment, in which a workplace uniform providing minimal protection is sufficient—largely used for nuisance contamination. ***Example***: Entering a construction site for inspection.	• Coveralls • Steel-toe boots that are chemical-resistant. ***Optional***: • Gloves • Safety glasses • Hard hat • Escape mask • Face shield

Sources*: OSHA https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.120AppB;*
National Environmental Trainers https://www.natlenvtrainers.com/blog/article/hazmat-protection-levels,
https://www.natlenvtrainers.com/blog/article/hazwoper-personal-protective-equipment-levels-for-employees

Selection of Proper Respiratory Protective Equipment

If you are selecting respiratory protective equipment (RPE), one should consider the following:

Substance:

- What is the type, nature, and toxicity of the hazardous material?
- Is it a mist, gas or solid?
- What control measures does the Material Safety Data Sheet for the substance you are working with recommend?

Operation:

- Ensure the right size and face fit – and remember facial hair will affect the fit.
- It needs to be reasonably comfortable and compatible with other PPE that is being worn. You should arrange for fit testing, i.e., a test confirming the fit of a respirator to form a tight seal on one's face before using it in the workplace.
- One needs to have a regular maintenance programme which includes cleaning and checking RPE for defects.

Activity:

- Is the work of short or long duration, in a confined space, with adequate ventilation, light or heavy work?
- What is access to clean air and does the wearer need clear vision?

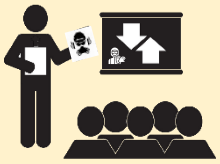
PPE Use, Maintenance, Storage, and Disposal

When engineering measures, work practice, and administrative controls have been implemented, and PPE is necessary, it is the employer's responsibility to ensure that the appropriate PPE and relevant training is provided to workers.

An employer should select the type of PPE that:

- protects the worker's health and safety,
- performs as designed for the work, and any hazards posed by the work,
- fits properly and is comfortable,
- is compatible with other PPE worn (for example, a combination of protective eye wear, hearing protection and a hardhat),
- can be properly maintained and stored,
- is easily replaced if worn out or damaged.

To ensure the various control measures are actively implemented, it is must that employers provide training to staff on the control measures, and the appropriate use, storage, and maintenance of the PPE. Topics that are recommended to be covered in any workplace training include:



- When is PPE required?
- What kind of PPE is needed?
- How to properly put on, adjust, wear, and safely remove the type of PPE used?
- The limitations of PPE
- How to properly care, maintain, and safely dispose of PPE?

Disposal of PPE

Generally, PPE should be disposed of in the same manner as the hazardous materials that you are working with. For example, PPE used for asbestos abatement should be disposed of with the asbestos material.

PPE may be suitable for reuse, but PPE is never suitable for recycling so it must never be put into your recycling bin or bag. Putting non-recyclables in with recyclable waste contaminates whole loads that could otherwise be recovered.

Limitations of PPE

- **PPE should be a last line of defence** as it does not eliminate the health or physical hazard posed by a hazardous material or waste. Safety workplace measures such as best practice, engineering, and administrative controls, must be applied first.

- PPE needs to **fit the wearer comfortably and correctly** and should be tested first before use. Faulty PPE can cause more harm than protection.

- If the risk changes the initial PPE selected for the job site may not match the new hazards. The jobsite **hazards must be monitored frequently** so PPE can be upgraded if necessary.

- PPE **should not be shared or reused** if it is meant to be disposable after each job.

- PPE needs to be **removed and stored properly** before leaving the work site as hazardous fibres and material can be attached to it. If not, these hazardous materials can be carried off-site exposing more people to harm.

- PPE needs to be in **good working condition to protect workers**, and if found to be defective it should be discarded and replaced.

More Information:

Links to manufacturers of safety equipment / PPE:

- https://safetyequipment.org/about-isea/isea-member-companies/
- https://www.workersshop.com.au/safety/
- https://ec.europa.eu/growth/sectors/mechanical-engineering/personal-protective-equipment-ppe_en

References

- University of South Florida: Environmental Health and Safety. http://www.usf.edu/ehs/
- https://unece.org/about-ghs
- Canadian Centre for Occupational Health and Safety (CCOHS). https://www.ccohs.ca
- Occupational Safety and Health Administration (OHSA). https://www.osha.gov
- WorkSafe New Zealand. https://www.worksafe.govt.nz
- Safe Work Australia. https://www.safeworkaustralia.gov.au/
- Health and Safety Executive. https://www.hse.gov.uk
- Occupational Safety and Health Administration (OSHA): Recommended Practices for Safety and Health Programs. https://www.osha.gov/safety-management/hazard-prevention#ai1
- Canadian Centre for Occupational Health and Safety (CCOHH): Hazard Control. https://www.ccohs.ca/oshanswers/hsprograms/hazard_control.html
- Chemscape: The Limitations of PPE as a Hazard Control Method. https://www.chemscape.com/blog/limitations-ppe-hazard-control-method
- WorkSafe British Columbia. OHS Guidelines Part 8: Personal Protective Clothing & Equipment. https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-guidelines/guidelines-part-08#SectionNumber:G8.2_3
- WorkSafe Victoria. https://www.worksafe.vic.gov.au
- The National Institute for Occupational Safety and Health (NIOSH): Hierarchy of Controls. https://www.cdc.gov/niosh/topics/hierarchy/default.html
- Occupational Safety and Health Administration (OSHA): Personal Protective Equipment. https://www.osha.gov/personal-protective-equipment
- Occupational Safety and Health Administration (OSHA): Occupational Safety and Health Standards 1910. https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.120AppB
- Victorian Trades Hall Council's (VTHC) Occupational Health and Safety Unit. https://www.ohsrep.org.au/dangerous_or_hazardous_what_s_the_difference
- Site Safe: Practical Safety Advice. https://www.sitesafe.org.nz/guides--resources/practical-safety-advice/
- Medical Waste Pros: Different Medical Waste Types and How to Dispose Them. https://www.medicalwastepros.com/2019/12/different-types-medical-waste-how-to-dispose-them/
- Canadian Centre for Occupational Health and Safety (CCOHH): Designing an Effective PPE Program. https://www.ccohs.ca/oshanswers/prevention/ppe/designin.html
- World Health Organisation (2020): Rational use of personal protective equipment (PPE) for coronavirus disease (COVID-19). https://apps.who.int/iris/bitstream/handle/10665/331498/WHO-2019-nCoV-IPCPPE_use-2020.2-eng.pdf
- International Labour Organisation: MNE Declaration. https://www.ilo.org/empent/Publications/WCMS_094386/lang--en/index.htm
- International Labour Organisation: Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187). https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C187
- International Labour Organisation: Occupational Safety and Health Convention, 1981 (No. 155). https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C155
- International Labour Organisation: Q&As on Business and Occupational Safety and Health. https://www.ilo.org/empent/areas/business-helpdesk/faqs/WCMS_DOC_ENT_HLP_OSH_FAQ_EN/lang--en/index.htm#Q6
- WorkSafe New Zealand: The Workplace Exposure Standards (WES) and Biological Exposure Indices (BEI). https://www.worksafe.govt.nz/topic-and-industry/monitoring/exposure-standards-and-biological-exposure-indices/
- WorkSafe New Zealand: Personal protective equipment (PPE) when working with asbestos. https://www.worksafe.govt.nz/topic-and-industry/asbestos/ppe-when-working-with-asbestos/
- SafeWork Australia: Workplace Exposure Standards. https://www.safeworkaustralia.gov.au/safety-topic/managing-health-and-safety/workplace-exposure-standards
- The United Nations Economic Commission for Europe (UNECE): About the GHS. https://unece.org/about-ghs
- International Labour Organisation: Global Database on Occupational Safety and Health Legislation (LEGOSH). https://www.ilo.org/dyn/legosh/en/f?p=14100:1:::NO:::

- SafeWork Australia: Law and Regulation. https://www.safeworkaustralia.gov.au/law-and-regulation/duties-under-whs-laws
- Centers for Disease Control and Prevention (CDC): Clean Up Safely After a Disaster. https://www.cdc.gov/disasters/cleanup/facts.html
- Graphic Products: Choosing PPE to protect against poisons in the workplace. https://www.graphicproducts.com/articles/choosing-ppe-to-protect-against-poisons-in-the-workplace/
- National Environmental Trainers: HAZMAT Protection Levels. https://www.natlenvtrainers.com/blog/article/hazmat-protection-levels
- National Environmental Trainers: HAZWOPER Personal Protective Equipment Levels for Employees. https://www.natlenvtrainers.com/blog/article/hazwoper-personal-protective-equipment-levels-for-employees
- University of Iowa: Environmental Health and Safety. https://ehs.research.uiowa.edu/list-hazardous-materials-and-disposal-contacts
- ERA Environmental: How a Safety Data Sheet Tells You What Personal Protective Equipment (PPE) to Use. https://www.era-environmental.com/blog/personal-protective-equipment-how-to-read-an-sds
- BP United States: Personal Protective Equipment. https://www.bp.com/content/dam/bp/country-sites/en_us/united-states/home/documents/products-and-services/pipelines/announcements/ppe-policy.pdf

Appendix A - PPE Program Checklist

Before any decision is made to begin or to expand a PPE program, it is important to understand the underlying principles.

The main elements that must be considered are:

- protection of workers,
- compliance with applicable laws / regulations / standards / guidelines,
- compliance with internal company occupational health and safety policy,
- technical feasibility.

The first step in the development of a PPE program is to identify the hazards at the worksite.

The following should be examined:

- work practices
- processes
- job procedures
- equipment
- products
- workplace layout
- individual factors

If the hazard warrants the use of PPE, the next task is to select the proper type.

Two criteria need to be determined:

- the degree of protection required, and
- the appropriateness of the equipment to the situation (including the practicality of the equipment being used and kept in good repair).

Employers can utilise this *Checklist* to design an effective PPE program:

1	**Initiate PPE Program** • Appoint a program coordinator or establish a health and safety committee. • Secure the active participation of all parties (employer, workers etc.). • Re-evaluate PPE program on an ongoing basis.
2	**Promote the PPE Program** • Publicize the program i.e., reasons for the program and how it will work. • Get commitment from management and workers to the program. • Incorporate program into the company occupational health and safety policy.
3	**Hazard identification and risk assessment** • Identify the job to be assessed • Review the job procedure into a sequence of steps (including equipment, work practices for each step). • Identify potential hazards. • Determine preventative measures to control each hazard e.g., apply the "hierarchy of controls" methods such as elimination, substitution, engineering controls, and administrative controls. PPE is the last line of defence. • Integrate accepted safety and health principles and practice into specific standard operation procedures.
4	**Selection of PPE** • Choose PPE to match the hazard and get advice on proper selection • Involve workers in the evaluation (workplace trial) • Consider the physical comfort of PPE • Evaluate cost considerations of PPE usage • Ensure PPE meets required standards / certification
5	**Fitting and Wearing PPE** • Include fitting of PPE to the individual • Observe or survey users to make sure the PPE is worn and worn properly
6	**Perform regular maintenance and inspection of PPE** • Make sure that workers know how to perform regular maintenance and inspection of their PPE • Make sure that workers can identify potential problems or defects with their PPE during the pre-use inspection or while wearing/using • Develop standard operating procedures for maintenance to include inspection, care, cleaning, repair and proper storage of PPE.
7	**Education and Training** • Verify that all users, supervisors, selectors, buyers, and stock keepers are educated and trained • Make sure that education and training programs are ongoing
8	**Audit the program** • Annual audits are common, but it may be advisable to review critical areas more frequently. • Review and compare production and safety performance records

Worker responsibilities include:

1	**Use of proper PPE** • Make sure you are wearing the right PPE for the job
2	**Maintenance and Inspection** • Inspect PPE before and after each use • Always take care of PPE • Clean all PPE after use • Repair or replace damaged or broken PPE • Store PPE in clean dry air - free from exposure to sunlight or contaminants.
3	**Education and Training** • Participate in education and training in how to fit, wear, and maintain PPE. • Ask questions to make sure you know when and what PPE should be worn, and why it should be worn
4	**Medical assessment of respirator wearers and documentation (when required)**

Appendix B - Example of a Hazard Identification and Risk Assessment Worksheet

Healthcare Waste Hazards Control Worksheet				
Activity	**Potential Hazard**	**Engineering Controls**	**Administrative Controls**	**Recommended PPE**
Handling infectious waste i.e. human blood, body fluids, tissues, or bloodborne pathogens (BBP)	- Exposure to infectious material or preservatives. - Eye or skin irritation.	- Separate disposal bin - Designated storage area	- SOP - job-specific training - Warning signs	- Gloves with inner and outer layers that are chemical-resistant - safety goggles or face shield for splash protection - chemical resistant apron - facemask - coveralls - steel toe boots
Handling sharps i.e., glassware, needles, sharp metal or plastic edge	-Laceration -Injection -Exposure	- Separate disposal bin - Designated storage area - Use rubber mats in sinks to protect glassware - use 'safer' sharps	- SOP - job-specific training - Warning signs - Use plastic disposables	- Heavy rubber gloves for handling glassware - Cut-resistant gloves when handling sharps - face and eye protection, as needed - coveralls - steel toe boots
Handling pharmaceutical medication waste	-Eye or skin damage -Lung damage from inhalation	- Designated storage area with adequate ventilation	- SOP - job-specific training	- Heavy chemical resistant gloves - safety goggles or face shield for splash protection - lab coat or coverall
Handling radiological medical waste	- Cell damage - Potential spread of radioactive materials	- Designated storage area	- SOP - job-specific training - Warning signs - Limited access and exposure time	- Protective gloves - coveralls

Asbestos and ACM Waste Hazards Control Worksheet				
Activity	**Potential Hazard**	**Engineering Controls**	**Administrative Controls**	**Recommended PPE**
Handling harmful dusts from asbestos and ACM waste	- Inhalation - Lung damage - Eye irritation	- Enclosures to limit access to waste	- SOP - job-specific training - Warning signs - Maintain a clean work area by using wet wiping method or vacuum with HEPA filtration after each use - Limited access and exposure time	- self-contained breathing apparatus (SCBA) or positive pressure supplied-air respirator with escape SCBA - Fully encapsulating, chemical-protective bodysuit - Disposable protective suit which may be worn over encapsulating bodysuit. - Steel toe boots that are chemical-resistant. - Gloves with inner and outer layers that are chemical-resistant. - Hard hat, if needed

E-Waste Hazards Control Worksheet				
Activity	**Potential Hazard**	**Engineering Controls**	**Administrative Controls**	**Recommended PPE**
Handling end-of-life electronic devices	-Electric shock -Inhalation -Eye and skin irritation	- Designated storage area with adequate ventilation	- SOP - job-specific training - Warning signs	-Safety glasses -Protective gloves - face mask -Coveralls - Steel toe boots that are chemical-resistant.
Handling automotive and marine batteries	-Electric shock -Eye and skin irritation	- Designated storage area with adequate ventilation	- SOP - job-specific training - Warning signs	-Safety glasses -Protective gloves -Coveralls - Steel toe boots that are chemical-resistant.

Other Hazards Control Worksheet				
Activity	**Potential Hazard**	**Engineering Controls**	**Administrative Controls**	**Recommended PPE**
Handling compressed gas cylinders (flammable, highly toxic, corrosive)	-Uncontrolled pressure release can cause personal injury or property damage -Fire or explosion; poisoning - severe respiratory, eye, and skin irritation	- store and use in a designated enclosed area with adequate ventilation - Secure compressed gas cylinders to a wall or bench mounted bracket - Use and store in a certified chemical fume hood or vented gas cabinet	- SOP - job-specific training - Warning signs - Keep regulators in good condition - Cap cylinders that are not in use or attached to equipment - Use a gas detection and alarm system	- Safety glasses should be worn when operating a regulator or when using compressed air for cleaning/dusting - Protective gloves

Other Hazards Control Worksheet				
Activity	**Potential Hazard**	**Engineering Controls**	**Administrative Controls**	**Recommended PPE**
			- Purchase the lowest concentration of the gas as possible	
Handling oil, fuels, and flammable solids and liquids	-Fire or explosion; poisoning - severe respiratory, eye, and skin irritation	- store and use in a designated enclosed area with adequate ventilation	- SOP - job-specific training - Warning signs	-Safety glasses -Protective gloves - face mask, if needed
Handling solvents, acids, and paint	- Poisoning - Fire - Skin/eye/lung damage	- store and use in a designated enclosed area with adequate ventilation	- SOP - job-specific training - Warning signs - Purchase pre-mixed paints and solutions	- coveralls - safety goggles or face shield for splash protection - Light chemical resistant gloves

Appendix C: Occupational Safety and Health (OSH) Legislation

Australia

Work health and safety laws for Australia are enacted by the Commonwealth, each of the six states, and the two internal territories. There are, therefore, nine general work health and safety statutes in Australia. In late 2009 the Australian Workplace Relations Ministers Council (WRMC) approved a Model Work Health and Safety Bill (the Model Act), which was to be adopted, in 'mirror' legislation by all the Australian jurisdictions by the end of 2011. The WRMC also approved Model Regulations and Codes of Practice, which have also been adopted by the Commonwealth, New South Wales, Queensland, South Australia, Tasmania and the two territories.

- *Work Health and Safety Act 2011*
- *Work Health and Safety Regulations 2011*
- *Model Code of Practice: How to manage work health and safety risks*
- *Model Code of Practice: Managing risks of hazardous chemicals in the workplace*
- *Model Code of Practice: How to manage and control asbestos in the workplace*
- *Model Code of Practice: How to safely remove asbestos*

New Zealand

The Health and Safety at Work Act 2015 (HSWA) is New Zealand's workplace health and safety law. It introduces new responsibilities for managing the work-related risks that could cause serious injury, illness or even death. Many duties under HSWA apply 'so far as is reasonably practicable'. It's an important concept that involves doing what is reasonably able to be done to ensure people's health and safety under the given circumstances.

- *Health and Safety at Work Act 2015*
- *Health and Safety at Work (General Risk and Workplace Management) Regulations 2016*
- *Health and Safety at Work (Hazardous Substances) Regulations 2017*
- *Health and Safety at Work (Asbestos) Regulations 2016*

United Kingdom

The Health and Safety at Work Act 1974 (the HSWA) is the foundation law of the existing system, but there are a number of other OSH-related acts and subsidiary regulations (more than 200 in all). The HSWA reflects the principle that those who create risks for employees or others while carrying out work activities are responsible for controlling those risks. It places specific responsibilities on employers, the self-employed, employees, designers, manufacturers, importers, and suppliers.

- *Health and Safety at Work etc. Act 1974*
- *The Personal Protective Equipment at Work Regulations 1992*
- *The Management of Health and Safety at Work Regulations 1999*
- *The Workplace (Health, Safety and Welfare) Regulations 1992*
- *The Control of Substances Hazardous to Health Regulations 2002. Approved Code of Practice and guidance*
- *Workplace health, safety, and welfare. Workplace (Health, Safety and Welfare) Regulations 1992. Approved Code of Practice and guidance*

United States

Workplace safety and health laws for the U.S.A are contained primarily in federal and state statutes. The main law protecting the health and safety of workers is the Occupational and Safety Health Act 1970, which covers commercial workplaces. The Occupational Safety and Health Administration (OSHA) is the agency of the Department of Labor, which sets and enforces general workplace health and safety standards. However, other federal agencies also establish safety and health regulations relating to their own areas of concern.

- Occupational Safety and Health Act of 1970
- Safety and Health Regulations for Construction 1926 Subpart C - General Safety and Health Provisions (1926.28 - Personal protective equipment)

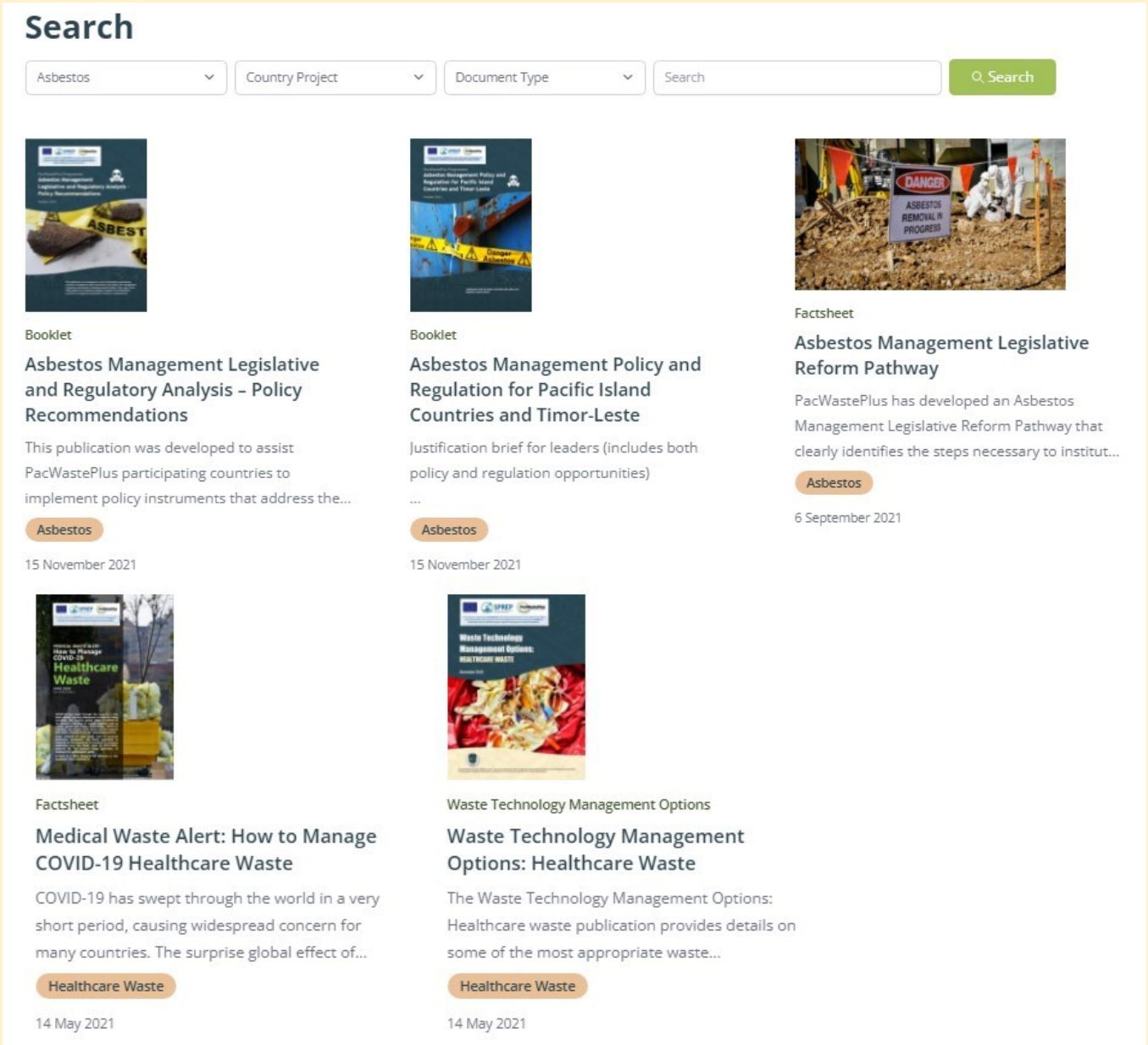
Canada

The Canada Labour Code (Labour Code), Part II and the Canada Occupational Health and Safety Regulations (OSH Regulations) made pursuant to that Code are the primary legislative tools protecting workers in "federal work, undertaking or business", including employees of the federal public service. With some exceptions, provincial or territorial occupational health and safety legislation applies to all other places of employment. In addition to the Code and Regulations, there are a number of other laws that contain provisions relating to occupational safety and health of federally regulated employees.

- Canada Occupational Health and Safety Regulations (SOR/86-304)
- Canada Labour Code [R.S.C., 1985, c. L-2].

Links to resources on WHS legislation for each country:

- Canada - Canadian Centre for Occupational Health and Safety (CCOHS). https://www.ccohs.ca
- USA - Occupational Safety and Health Administration (OHSA). https://www.osha.gov
- New Zealand – WorkSafe New Zealand. https://www.worksafe.govt.nz
- Australia - Safe Work Australia. https://www.safeworkaustralia.gov.au/
- UK – Health and Safety Executive. https://www.hse.gov.uk
- Link through ILO Global Database on Occupational Safety and Health Legislation (LEGOSH). https://www.ilo.org/dyn/legosh/en/f?p=14100:1:::NO



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