

# Emergency Procedures for Hazardous Substances

# Agenda

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# Background

Part 5 of the Occupational Health and Safety Regulation sets out the requirements for emergency planning relating to hazardous substances.

On February 3, 2025, amendments to these requirements will come into effect.



# Background

Part 5 currently requires:

- An emergency plan that addresses emergency conditions which may arise from within the workplace or from adjacent workplaces
- An inventory of hazardous substances at the workplace in quantities that may endanger workers in an emergency
- A risk assessment
- Evacuation and notification procedures (including adjacent workplaces and residents)
- Safe work procedures
- Worker training
- Drills



# Regulation Overview

Regulation	Change
Section 5.97 Definitions and application	New section – clarifies application
Section 5.98 Worker participation	New section – clarifies requirement
Section 5.99 Inventory of hazardous substances	Renumbered – adds specificity and clarity
Section 5.100 Risk assessment	Renumbered – adds specificity and clarity
Section 5.101 Emergency response plan	Renumbered – clarifies requirement
Section 5.102 – Emergency procedures – protection and notification	Renumbered – expanded and added specificity
Section 5.103 Emergency procedures – safe work	Renumbered – expanded and added specificity
Section 5.104 Training and drills	Renumbered – adds specificity and clarity

**Key changes to the Regulation**

# Section 5.97 Definitions and Application

Examples of emergency situations that are within the scope of this section include:

- An accidental spill or release of hazardous substances at the employer's workplace or at a neighbouring workplace
- A fire caused by or involving hazardous substances
- A natural disaster that could result in spills or other process upset conditions involving hazardous substances

# Hazardous Substances

Hazardous substances are defined as biological, chemical, or physical agents that, by reason of their properties, are hazardous to the health or safety of people exposed to them

Examples of hazardous substances include hazardous products covered by the workplace hazardous materials information system (WHMIS), explosives, pesticides, radioactive materials, hazardous wastes, consumer products, etc.





# Emergencies within this scope

Consider all hazardous substances used or stored at the workplace that could cause or worsen an emergency

Hazardous consumer products will generally not require stand-alone emergency planning, unless stored in large quantities

Emergencies at other workplaces



# Reasonably foreseeable emergencies

Some examples of emergencies that may be determined to be reasonably foreseeable through this process include:

- Equipment failure
- Spills or accidental release, or containment failure
- Reasonably foreseeable process upset conditions
- Human error in identifying or handling substances or operating equipment
- Cyber or other security vulnerabilities to equipment
- Loss of power or cooling, if these could impact hazardous substances
- Impact storage or other processes involving hazardous substances.

## Section 5.98 Worker Participation

This section clarifies that all parts of emergency planning must be done in consultation with workers and requires that workers have ready access to all elements of the emergency plan.



# Section 5.99 Inventory of hazardous substances

Developing and maintaining an inventory of hazardous substances for the purpose of this section is three-fold:

1. To assist the employer to perform an accurate assessment of the risk posed to workers in the event of an emergency in accordance with s. 5.100,
2. To assist employers to develop effective emergency procedures in accordance with s. 5.101 to 5.103
3. To assist with communicating risk to responding agencies in the event of an emergency



# Inventory of hazardous substances

- Inventories created under this section need only to include hazardous substances that are present in quantities that could reasonably endanger a person in an emergency.
- The specific quantity of material that could reach this threshold depends on several factors including:
  - The hazardous properties of the material
  - The quantity of material used or stored at the workplace
  - The proximity of the material to where workers are normally located
  - The response expected or required by workers in the event of an emergency

# Structure of inventory

- Employers of large workplaces comprised of multiple buildings may choose to create separate inventories for different buildings or areas of buildings, if it serves to better inform emergency procedures.
- If hazardous substances are moved between buildings or areas, the same quantity of substances may be represented on multiple inventories.



# Section 5.100 Risk Assessment

This section has been amended to require employers to assess the risk posed by:

- All hazardous substances in the inventory
- Hazardous substances that could foreseeably enter the workplace due to an emergency outside of the workplace
- Hazardous substances that could be generated at the workplace (for example, because of an accidental reaction)



# Assessing the risk posed by hazardous substance

Section 5.100 of the OHS Regulation ("Regulation") states:

- (1) An employer must ensure that, for a workplace, an assessment of the following risks is conducted:
  - (a) a risk posed in an emergency by any hazardous substance identified in the inventory for the workplace;
  - (b) a risk posed by any other hazardous substance if it is known or reasonably foreseeable that the hazardous substance could be generated at the workplace or, because of an emergency, enter the workplace.





# Risk assessment objective

The objective of a risk assessment conducted under this section is to determine the relative risk that the hazardous substance poses to workers and others, considering:

- How likely an emergency caused by or involving the hazardous substance is to occur,
- The potential consequences to persons exposed to the hazard in the event of an emergency
- The controls that are currently in place to minimize the risk of an emergency occurring
- How likely a hazardous substance is to endanger a person in the event of an emergency, given the employer's controls and current emergency response procedures

# Assessing risk

Some examples hazardous substances entering the workplace:

- Being advised of a risk by a neighbouring employer, fire department, or other authority
- Knowledge of prior releases or emergencies publicly reported
- Presence of large tanks at neighbouring facilities
- Proximity to major roads or railways where hazardous goods are transported
- Environmental hazards known to be a risk at the workplace location that could involve hazardous substances such as flooding, earthquake, and forest fires.



# Assessing complex processes

- When assessing the risk posed by hazardous substances that are present in large quantities, used in complex processes, or those which pose a high risk of harm to workers, a more structured risk assessment method may be necessary to fully evaluate risk.
- There are many formal risk assessment methods that could be used to evaluate risks posed by hazardous substances



# Assessing complex process

- ❖ Hazard and Operability Study (HAZOP)
- ❖ Failure Mode and Effects Analysis (FMEA)
- ❖ Systems Theoretic Process Analysis (STPA/STAMP)
- ❖ What-If Analysis
- ❖ Fault Tree Analysis (FTA)
- ❖ Quantitative Risk Assessment (QRA)
- ❖ Screening Level Risk Assessment (SLRA)
- ❖ Layer of Protection Analysis (LOPA):
- ❖ Dispersal Modelling
- ❖ Bow-tie Analysis
- ❖ Process Hazard Analysis (PHA)

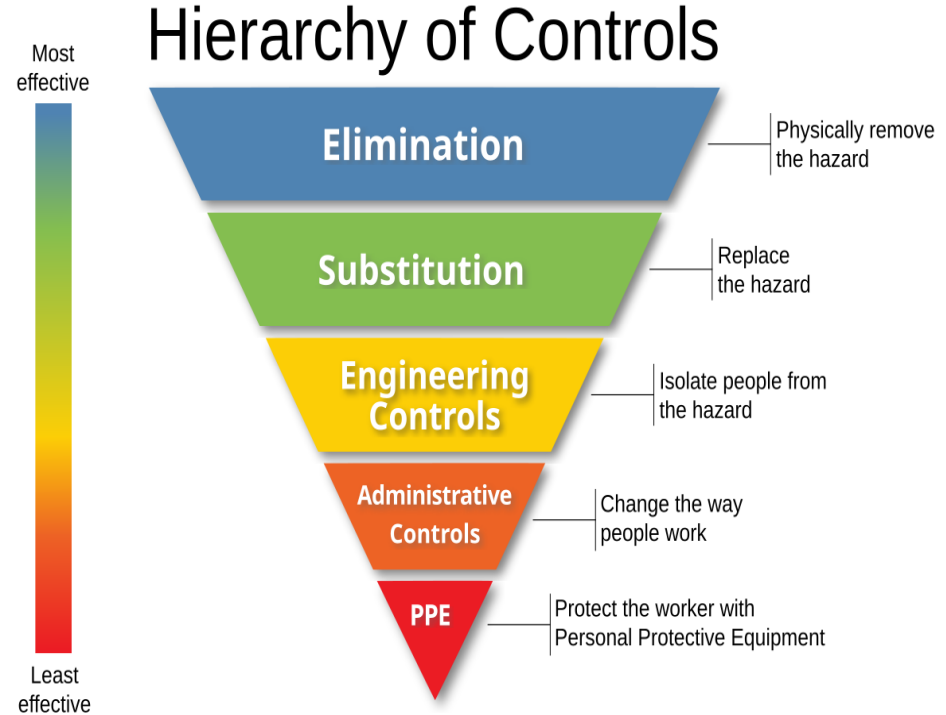
# Sound engineering practice

Employers are expected to consider “sound engineering practice” when assessing the risk associated with hazardous substances – particularly those that are used in complex processes.



# Inherently safer design

Inherently safer design is used to describe a process of integrating a variety of risk reduction and risk management strategies.



# Qualified persons

- Under section 1.1 of the Regulation, "qualified" means being knowledgeable of the work, the hazards involved, and the means to control the hazards, by way of education, training, experience, or a combination
- Individual
- Team of people



# Qualified person

- For substances that are less hazardous or present in smaller quantities, it may be sufficient to base a risk assessment and emergency procedures on literature reviews or other reliable sources of information.
- Employers are encouraged to consider the input of workers when determining who is qualified for the purpose of assessing risks under this section.





# Assessing risk posed by hazards outside the workplace

Examples of other hazardous materials that might enter some workplaces include:

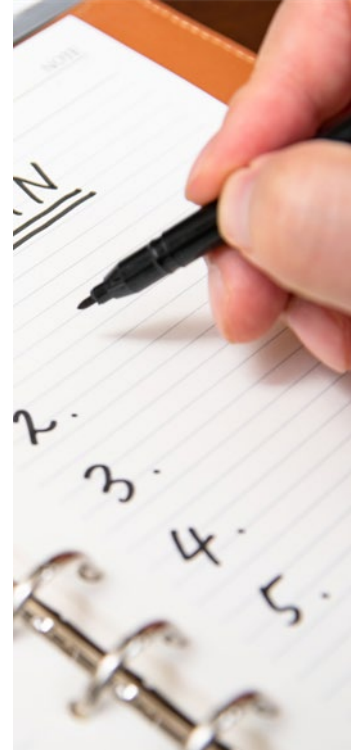
- Wildfire smoke from forest fires
- Natural gas from broken gas lines
- Methane from neighbouring landfills
- Ammonia released from neighbouring ice arenas
- Explosions that may result from bulk fuel tanks



# Section 5.101 Emergency response plan

Emergency Response Plans (ERP) must minimally include the requirements of s. 5.101 and should include the following components:

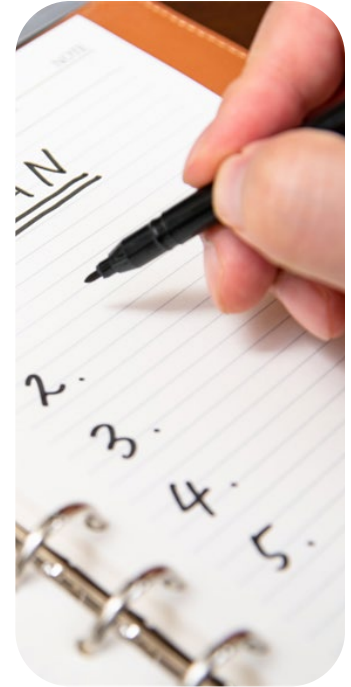
- A clear description of the emergency to which the plan applies, including a description of the areas covered by the plan, if relevant.
- The inventory of hazardous substances that may pose a risk to workers or others as a result of the emergency (or reference to the employer's complete inventory under s. 5.98).



# Emergency response plan

Plans must also include:

- Any risk assessments that relate to hazardous substances that could cause or potentially impact the risk to workers posed by the emergency. ERPs may reference risk assessments conducted as part of exposure control plans or other documentation, were relevant.
- Assigned roles and responsibilities including the person or persons responsible
- Procedures for responding to emergencies
- Training and drill requirements



## Section 5.102 Emergency procedures – protection and notification

- The amendments expands on the list of people who must be notified under this section to include:
- Anyone who may be at risk of serious injury, serious illness, or death, or whose ability to reach a place of safety unassisted may be impaired because of exposure to the hazardous substance.
- This includes people outside of the workplace if the risk extends beyond workplace boundaries.



# Agencies to notify

- Other agencies
- Contact information for those agencies relevant to the emergency plan



# Local agencies

- Employers should determine appropriate contact information for local agencies such as:
  - Local Fire department (Section 11 of the Fire Services Act requires that fires be reported to the local fire department or district police)
  - Municipal agencies (municipal bylaws may require notice of certain incidents be provided to local government and bylaw enforcement)
  - Utility providers (Fortis, BC Hydro)
  - Contracted hazmat response companies



# Provincial and federal agencies

WorkSafeBC	Canadian Coast Guard
Technical Safety BC	Transport Canada
Canadian Nuclear Safety Commission	Transportation Safety Board of Canada
Canada Energy Regulator	Environment and Climate Change Canada
Ministry of Environment – Province of BC Environmental protection and sustainability	

# Incident command systems

- Understand the basics of incident command
- Integrate the concepts of an incident command system into their own emergency plans





# Section 5.103 Emergency procedures – safe work

This section requires employers to develop written procedures for:

- Determining the location and extent of a hazardous substance release
- Controlling spills or release of hazardous substances
- Cleaning up spills, or taking other remedial action
- Disposing of a hazardous substance
- Evaluating the safety of the workplace prior to re-entry



# Developing safe work procedure (SWP)

- When emergencies occur, quick action may be necessary to reduce risk and damage.
- Think through potential emergency scenarios and develop effective procedures for responding.



# SWP for nonresponding workers

- If an employer chooses to engage another employer who specializes in hazmat response to deal with certain types of emergencies, then safe work procedures may be limited to:
  - Emergency notification of workers and other people who may be affected
  - Ensuring the safety of the employer's own workers (primarily through safe evacuation or shelter in place)
  - Preventing access to unsafe areas of the workplace
  - Contact procedures for acquiring hazmat or other response agency
  - Procedures for communicating workplace hazards and the nature of emergency to the response agency

# SWP readily available

- Copies of safe work procedures and facility hazard information must be readily available
- How will the procedures will be provided to responding agencies in the event of an evacuation.
- Response organizations



# Evaluating the safety of workplaces after an emergency

- Employers should consider business continuity plans in the development of emergency procedures
- Depending on the nature of the emergency, an assessment may be necessary to ensure it is safe to do so
- Include plans for ensuring the safety of the workplace following an emergency can assist employers to reduce down-time
- Where emergencies are localized or involve smaller quantities of less hazardous materials, quantitative assessment may not be necessary. This decision should be made by a qualified person in consultation with workers

# Section 5.104 Training & Drills

This section maintains the requirement to ensure workers are adequately trained in emergency procedures and clarify that drills must be designed to ensure procedures are effective.

The amendment also adds a new requirement for

- Drills to be conducted annually and after any significant change to the emergency response plan are made



# Training and drills

- Employers who use or store multiple hazardous substances may be required to develop multiple emergency plans for a variety of potential emergencies
- Section 5.104(3) requires annual drills, however this does not mean that employers must conduct a drill of every emergency procedure every year
- The type and frequency of drills should be determined based on the relative risk associated with the emergency
- Emergencies that are most likely to occur, or those that pose the greatest risk to workers or others should be drilled more frequently than those that are less likely or pose a lower risk

# Training and drills

When conducting an emergency drill involving hazardous substances, several key aspects should be assessed to ensure the effectiveness of the emergency response plan including:

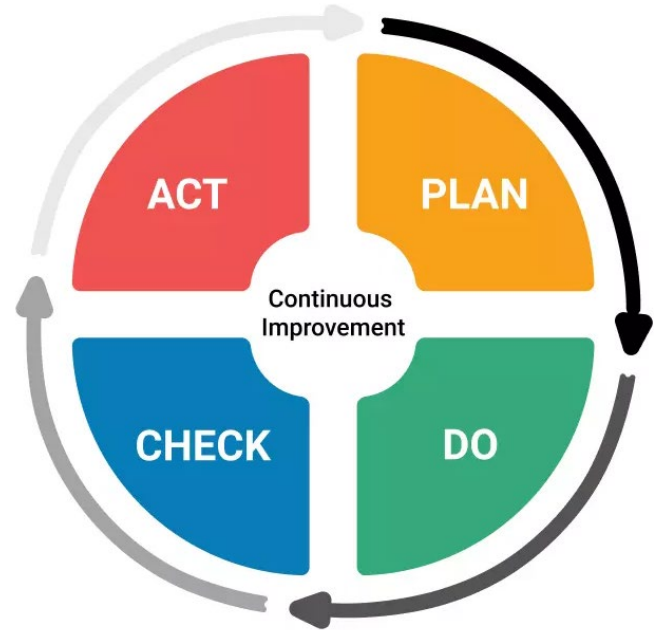
- Notification and Communication
- Evacuation Procedures
- Emergency Response Actions
- Knowledge and Preparedness
- Specific Hazardous Substance Considerations





# Training and drills

- Following the drill, an evaluation of drill performance should be conducted to deficiencies or areas of improvement in emergency response plan.
- Where deficiencies are identified that require significant changes to the plan, the changes should be implemented and a new drill conducted as soon as practicable to ensure effectiveness.



# What's needed

- Employers are not expected to contemplate every possible emergency for every hazardous substance used or stored at the workplace
- Where groups of hazardous substances have the same intrinsic risks, emergency plans may contemplate groups of substances
- Emergency planning efforts should be focused on those hazardous substances that are used or stored in large quantities, involved in complex processes, or which are highly flammable or toxic
- Separate Documents not required



# More information

- For the full text of the Regulation amendments, see the Board of Directors decision document: [BOD Decision — 2024/05/29-05 — Amendments to the Occupational Health and Safety Regulation — Part 5, Emergency Planning | WorkSafeBC](#)
- Backgrounder [Backgrounder: Emergency procedures for hazardous substances | WorkSafeBC](#)
- Guidelines are coming in conjunction with the regulations in February

**Questions?**