

Workplace health and safety after a flood

OHS information for employers and workers

This bulletin outlines some of the hazards that can be introduced as a result of a flood and ways to address those hazards. There might be additional occupational health and safety (OHS) requirements related to your work site or the type of work you do. It is essential that you identify and address all hazards.

Please note that a flood may be part of a local emergency and subject to *Public Health Act* orders and directives as well as *Emergency Management Act* directives and evacuation orders. Employers must follow all such orders and directives, and ensure that remedial work on buildings or work sites is not commenced until public officials authorize such work to begin.

Key information

- A flood can introduce new hazards into formerly safe work sites.
- Conduct a hazard assessment before entering a building.
- Ensure workers have appropriate personal protective equipment (PPE) to do their jobs.

Responsibilities

Employers must protect their workers and other individuals at, or in the vicinity of, the work site from potential hazards. Workers also must take

reasonable care to protect the health and safety of themselves and others in the vicinity of the work site.

Employers must perform a hazard assessment before entering a work site after a flood.

- Read [Hazard assessment and control: a handbook for Alberta employers and workers](#).
- See the hazard assessment worksheet at the end of this bulletin.

Protecting workers

Require workers to wear the appropriate personal protective equipment. This may include:

- Respiratory equipment to protect from exposure to particulate matter and chemical vapours. Ensure the equipment is appropriate for the job and fitted properly. See [Respiratory protective equipment: An employer's guide](#) for more information.
- Chemical, cut- and puncture-resistant gloves.
- Steel-toed rubber boots.
- Disposable clothing.
- Protective eyewear.

Employers must ensure workers can decontaminate themselves, their protective equipment, tools and other equipment.

Prohibit eating, drinking and smoking in the work area. Designate a separate area for these activities after workers decontaminate.



Alberta's OHS Act section 3(1a) states:

Every employer shall ensure, as far as it is reasonably practicable for the employer to do so,

the health and safety and welfare of

- (i) workers engaged in the work of that employer,
- (ii) those workers not engaged in the work of that employer but present at the work site at which that work is being carried out, and
- (iii) other persons at or in the vicinity of the work site who may be affected by hazards originating from the work site,

Unsafe work



Right to refuse dangerous work

A worker has a right to refuse work if they believe on reasonable grounds that there

is a dangerous condition at the work site, or that the work is a danger to themselves or others.

Alberta OHS considers dangerous conditions to include health and safety hazards that are not normal for the job or normal hazards that are not properly controlled.

Workers have an obligation under section 5(e) of the *OHS Act* to report concerns about unsafe or harmful work site acts or conditions to the employer or supervisor. Under section 5(a) of the *OHS Act*, workers must use reasonable care to protect their own health and safety, and that of other persons at or near the work site, while they are working. This may require that the worker does not perform the work.

Building Structure

Before entering a building, the building structure must be assessed. Depending on the nature of the damage, this assessment must be completed by a competent person who is trained, qualified, experienced. Consider:

- the integrity of the building envelope
- any live energy sources that could become electrical hazards
- submerged openings, for example holes in floors, uncovered manholes, damaged stairways
- areas of standing water that could present a drowning hazard
- newly formed confined spaces or restricted spaces
- debris causing unstable surfaces and tripping or slipping hazards
- newly exposed asbestos-containing materials

If workers are conducting demolition or renovation activities, the employer must ensure these activities themselves don't compromise building integrity.

- The employer should consult a structural engineer to assess the building before allowing anyone to enter.

Electrical hazards

The employer must ensure all electrical hazards are controlled before power is restored to a building after a flood.

- Use ground fault circuit interrupters if there are areas of standing water that cannot be pumped out before beginning work where electrical equipment is required.

Downed power lines are also a potential hazard after a flood.

- Assume all power lines are still energized.
- Remember water and objects in contact with power lines can carry electricity.

Carbon monoxide

During flood response and cleanup, fuel powered generators and equipment may be used, particularly in structures with no power. Carbon monoxide (CO)

is generated from burning fuels such as gasoline and diesel. Because it is a colourless, odourless gas and is not irritating, workers may be unaware they have been exposed. Signs of CO exposure can include impaired judgement, headaches, nausea, dizziness and fainting.

- Only use fuel-powered fans, heaters and electricity generators in well-ventilated spaces.
- Open windows and doors.
- Make sure all workers are trained on the signs and symptoms of CO exposure as well as the controls to prevent exposure.

Learn more about [CO as a workplace hazard](#).

Contaminated water

Flood water often becomes contaminated with a variety of biological contaminants. Some are normal contaminants from bodies of water and some are from sewage. Sewage can contain microorganisms that can cause diseases like hepatitis, gastroenteritis and tetanus. Assume all flood water is contaminated.

- Avoid direct contact with items that have been in contact with floodwater.
- Wear appropriate personal protective equipment: cut- and puncture-resistant gloves that provide protection from chemical hazards, rubber steel-toed boots, protective eyewear and clothing that is easy to clean or disposable.
- Follow good workplace hygiene practices: Clean hands and face before eating, drinking, smoking or touching clean surfaces. Properly decontaminate tools and equipment (including personal protective equipment).

Mould

Mould growth can start within 24 hours of material becoming wet. Exposure to mould can result in irritation to the eyes, skin or respiratory tract. Most healthy people have little or no reaction when exposed to mould.

If mould contamination is suspected, dry and clean the contaminated materials if it is possible to do so, otherwise remove and replace. Guidelines for

responding to clean water damage to prevent mould growth are provided at the end of this bulletin.

To learn more about mould at the workplace read [Do I have a workplace mould problem?](#) and [Best Practices: Mould at the work site](#).

Asbestos

If a structure was built prior to 1990, there is a potential for asbestos-containing materials to be present. It is not possible to confirm if a structure contains asbestos by visual examination. A proper survey, including the collection and analysis of building material samples, must be completed before renovation or demolition activities begin. This may not be possible for a building which is structurally compromised. When in doubt, you should presume asbestos is present unless you have information (for example, previous building sampling results) that confirms it is not.

- Remove, enclose or encapsulate any asbestos-containing materials in renovation area before starting a **renovation**.
- Remove all asbestos-containing materials prior to starting **demolition** projects.



Section 34 of the OHS Code requires that any building materials with the potential to release asbestos fibers must be removed prior to demolition. If the asbestos-containing materials cannot be removed, an acceptance to section 34 of the code is required.

Read the [Alberta Asbestos Abatement Manual](#) for guidance on how to assess and abate asbestos.

Confined and restricted space

The danger of a hazard can be intensified in a confined or restricted space.

A **restricted space** can be seen as an enclosed or partially enclosed space, not designed or intended

for continuous human occupancy that has a restricted access or egress. It can be thought of as a work area in which the only hazard is the difficulty of getting into or out of the space – with all other hazards controlled or eliminated in accordance with Part 2 of the OHS Code.

A **confined space** is a restricted space which may become hazardous to a worker entering it because of (a) an atmosphere that is or may be injurious by reason of oxygen deficiency or enrichment, flammability, explosivity or toxicity, (b) a condition or changing set of circumstances within the space that presents a potential for injury or illness, or (c) the potential or inherent characteristics of an activity which can produce adverse or harmful consequences within the space.

Though all restricted space requirements apply to confined spaces, not all confined space requirements apply to restricted spaces. Common hazards in confined spaces include exposure to toxic or flammable gases and chemicals, low oxygen, structural deficiencies and working alone. Some suggestions to control hazards in confined spaces include:

- Always conduct a hazard assessment and test air quality before entering a confined space.
- Provide adequate ventilation.
- Remove all liquids from the space.

For more information on working in confined spaces read [Guideline for Developing a Code of Practice for Confined Space Entry](#).

Additional health risks

Fatigue – Workers may work long hours during a flood. Fatigue creates a hazard by reducing physical and mental functioning, and impairing judgement and concentration. To help manage fatigue:

- schedule safety-sensitive tasks for earlier in the day
- maintain consistency in work schedules

- encourage workers to maintain a healthy sleep pattern, generally seven to nine hours of sleep every night
- establish a regular check-in protocol

Hypothermia – workers standing in water or working in damp spaces for extended periods may suffer lowered body temperatures. Signs of hypothermia include uncontrollable shivering, stumbling and drowsiness. To help prevent hypothermia:

- require workers to wear warm, waterproof clothing and footwear when working in cold, wet areas or in standing water and to change out of damp clothing
- establish a warm-up schedule to take breaks away from the cold

Heat stress – workers working in excessive heat from weather or from fans and heaters may experience elevated body temperatures and may experience heat stress. Signs of heat stress include thirst, headache, nausea and irritability. To help prevent heat stress:

- have plenty of cool drinking water available
- establish a cool-down schedule to take breaks away from the heat

Read [Best Practices: Working Safely in the Heat and Cold](#) and [Fatigue, Extended Work Hours and Workplace Safety](#) to learn more.

Exposure to industrial cleaners – Industrial cleaners can be hazardous chemicals. To protect yourself:

- protect the skin when using the product, always wear appropriate gloves
- wear protective eyewear or a face shield to prevent splashes from contacting the eyes
- know the hazards of the product and follow the recommended work procedures if there is a spill

Many of these products are covered by Workplace Hazardous Materials Information System (WHMIS) requirements. For more information on the product, refer to its safety data sheet (SDS) and label. To learn about WHMIS requirements read [WHMIS 2015 information for employers](#) and [WHMIS 2015 information for workers](#).

For chemicals that do not have an SDS, including consumer products, employers must still provide training on product hazard information, health effects, safe work procedures, safe use, recommended protective equipment and storage.

Mental health – Traumatic events like emergencies and natural disasters can have an impact on workers' mental health. To cope with the stress and emotions during the disaster, and in the days and weeks that follow, offer workers support:

- ensure staff are aware of, and have access to, the organization's employee assistance program, if there is one
- direct workers to Alberta Health Services' [Help in tough times](#) web page for a list of resources
 - [Mental Health Help Line](#): 1-877-303-2642

For more information

Do I have a workplace mould problem? (BH018)
ohs-pubstore.labour.alberta.ca/bh018

Best practices: mould at the work site (BH019)
ohs-pubstore.labour.alberta.ca/bh019

Worker exposure to sewage (GH017)
ohs-pubstore.labour.alberta.ca/gh017

Contact us

OHS Contact Centre

(Complaints, questions, reporting serious incidents)

Anywhere in Alberta

- 1-866-415-8690

Edmonton & surrounding area

- 780-415-8690

Deaf or hearing impaired

- 1-800-232-7215 (Alberta)

- 780-427-9999 (Edmonton)

OHS Online Incident Reporting

(Potentially serious, mine or mine site incidents)

oirportal.labour.alberta.ca/pre-screening/

Website

alberta.ca/OHS

Get copies of the OHS Act, Regulations and Code

Alberta Queen's Printer

qp.gov.ab.ca

Occupational Health and Safety

alberta.ca/ohs-act-regulation-code.aspx

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Hazard assessment worksheet for flood events

Location: _____

Date: _____

Is the building structurally safe to enter? Yes No Unsure

If no: No worker enters the building until the hazard has been controlled.

If unsure: Retain a structural engineer to assess the structure.

Is there standing water in the building? Yes No

If yes: Pump out water before conducting hazards assessment, if possible to do so.

If no: Proceed to hazard assessment.

Is there an emergency response plan to address rescue of workers or to deal with incidents? Yes No

Type of hazard	Present Yes/No	Control
Sewage contamination		
Mould		
Damaged chemical containers (If yes, list potential contents)		
Damaged storage tanks (If yes, list potential contents)		
Chemical odours		
Industrial cleaners		
Asbestos in building materials		
Lead paint		
Mercury in light fixtures, switches, gauges		
Diesel exhaust		
Other chemical hazards (list)		
Electrical hazards		
Slips, trips and falls		
Falls from heights		
Fire and explosion (For example damaged natural gas lines, leaks from fuel tanks.)		
Heat stress		
Confined or restricted spaces		
Ladders		
Falling hazards (For example, openings in floors, damaged stairs)		
Lifting of heavy items		
Working alone		
Insufficient lighting		
Sharp edges		
Other physical hazards (list)		

This form is for example purposes only. Completing this form alone will not necessarily put you in compliance with the legislation. It is important and necessary that you customize this document to meet the unique circumstances of your work site. Further, it is essential that this document is not only completed, but is used, communicated, and implemented in accordance with the legislation. The Crown, its agents, employees or contractors will not be liable to you for any damages, direct or indirect, arising out of your use of this form.

Guidelines for response to clean water damage within 24-48 hours to prevent mould growth

These guidelines are for damage cause by clean water. If the water source is contaminated with sewage or chemical or biological pollutants, then additional personal protective equipment and procedures are required and a qualified professional should be consulted.

Water damaged material	Preventative action
All surfaces	Accelerate the drying process with dehumidifiers, fans, and/or heaters.
Books and papers	Discard non-valuable items. Valuable or important items: <ul style="list-style-type: none"> • photocopy and discard original, • freeze in-frost-free freezer, or • freeze dry.
Carpet, backing and subfloor – dry within 24-48 hours	Remove water with water-extraction vacuum. Reduce ambient humidity levels with dehumidifier. Accelerate drying process with fans.
Ceiling tiles	Discard and replace.
Cellulose insulation	Discard and replace.
Concrete or cinderblock	Remove water with water extraction vacuum.
Wallboard (drywall/gypsum board)	Best approach: remove and replace. May be dried if there is no obvious swelling and the seams are intact. Ventilate the wall cavity if possible.
Upholstered furniture	Remove water with water extraction vacuum. Accelerate drying process with dehumidifiers, fans and/or heaters. For valuable pieces, consider consulting a restoration/water damage professional who specializes in furniture.
Fibreglass insulation	Discard and replace.
Hard surface, porous flooring (linoleum, ceramic tile, vinyl)	Vacuum or damp wipe with water and mild detergent – scrubbing if necessary – and let dry. Check subflooring, dry if necessary.
Non-porous, hard surfaces (plastics, metals)	Vacuum or damp wipe with water and mild detergent – scrubbing if necessary – and let dry.
Window drapes	Follow laundering or cleaning instructions recommended by the manufacturer.
Wood surfaces	Remove moisture immediately and use dehumidifiers, gentle heat and fans for drying. Use caution when applying heat to wood. Wet paneling should be pried away from the wall for drying.

This table is adapted from information in the Alberta Infrastructure and Transportation document *Mould in indoor environment risk assessment and management program handbook* (June 2006) and the USEPA document *Mould remediation in schools and commercial buildings* (2001).