

Weather

Weather – Floods

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What is a flood?

A flood is an overflow of water that submerges land that is usually dry. The term flooding covers a wide range of events, anything from a few inches of water to several feet. Floods can occur when there is heavy or steady rain for several hours or days, which oversaturates the ground. They also occur during snow and ice thaw on land and in waterways. Floods can occur quickly or build gradually. Several types of flooding may occur across Canada, depending on the local setting, and include flash-flooding, ice jam, large lake flooding, and urban flooding to name a few.

Are floods a concern in Canada?

Floods are one of the most common and widespread natural severe weather events. As a weather event, floods represent the most costly in Canada in terms of property damage.

What is a Flood Susceptibility Index (FSI)?

The flood susceptibility index is a national map of flood susceptibility or flood-prone areas based on patterns of historical flood events as predicted by an ensemble machine learning model. This information can assist you when completing your workplace's risk assessment. The flood map is available from the Government of Canada at the [Flood Susceptibility Index \(FSI\)](#) - [Open Government Portal](#).

What is the difference between a flood warning, flood watch, and flood advisory?

There is no national definition for these terms and each province has its own term. Generally speaking:

- A **flood warning** is issued when flooding is imminent or already occurring.
- A **flood watch** is issued when conditions are favourable for flooding, but a flood is not yet occurring.
- A **flood advisory** indicates less severe flooding that may still cause an inconvenience (a flood warning is a more urgent and dangerous situation).

Protocols and definitions above vary and should be verified for your jurisdiction. Please refer to your local weather network, the government agency responsible for flood alerts, and visit [Stay informed - Canada.ca](#) for flood information and resources for your province or territory.

Are floods a workplace concern?

Floods present an immediate safety hazard at the time of flood. Hazards include the risk of drowning, electrocution, or injuries from the structural collapse of a building. They can also present a hazard after the event during remediation, or from mould and indoor air quality (IAQ) issues.

For business continuity, floods can cause significant property damage and loss of records that are physically stored in areas that are affected by the flood.

What are the impacts of a flood?

Floods can also have medium- and long-term health impacts, including:

- Water- and vector-borne diseases
- Injuries, such as lacerations or punctures
- Chemical hazards due to unintentional releases

- Mental health effects associated with emergency situations, loss of possessions or property
 - Disrupted health systems, facilities and services. For example, leaving communities without access to health care and programs
 - Damaged infrastructure, such as food and water supplies, and safe shelter
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What are the hazards that arise from floods?

Hazards from a flood may include:

Biological Hazard

- Contaminated water (e.g., chemicals may spill into the water, or sewage may enter the water when systems become overwhelmed)
- Mould and mildew
- Vector-borne diseases. For example, standing water provides areas for mosquito breeding

Chemical Hazard

- Hazardous material spills, including fuel and heavy metals
- Corrosion of container
- [Carbon monoxide](#) poisoning. Power outages after a flood may affect ventilation or the use of a fuel-powered generator may introduce carbon monoxide into the space
- Possible exposure to [asbestos](#) or [lead](#) when remediating and cleaning older buildings

Ergonomic Hazard

- Risk from shovelling or lifting while [filling, carrying, and placing sandbags](#)
- Risk when [lifting](#) or from awkward positions during remediation activities

Physical Hazard

- Risk of [noise](#) due to remediation activities
- [Extreme](#) temperature
- [Cold stress](#), possible risk of hypothermia due to exposure to water
- [Heat stress](#) due to system outages or exertion during clean-up

Psychological Hazard

- [Psychological](#) and emotional stress from displacement and loss

Safety Hazard

- Mechanical and equipment hazard
- Damage to buildings, vehicles, equipment, roads, etc.
- Instability of heavy machines
- Slippery surfaces ([slips, trips, and falls](#))
- Electrocution risk
- Falling objects
- Submerged hazards you cannot see, such as uneven flooring or trip hazards
- Physical trauma due to impacts from debris or building collapse
- Lack of ventilation
- Transportation and access hazards, including blocked routes

What can workplaces do to be prepared for a flood?

Workplaces should conduct a risk assessment to evaluate the flood risk and impact of a flood. Check if the work area is at risk or has historically been at risk for flooding. Know the risks specific to your community, geography, and region.

- Include flood events as a part of your workplace's [emergency response plan](#)
- Train employees on workplace emergency preparedness procedures, including flood awareness drills and review first aid training
- Have emergency kits and personal protective equipment available
- Protect electrical systems using Ground Fault Circuit Interrupters (GFCI)
- Locate electrical equipment, heating, ventilation and air conditioning (HVAC) units, and machinery above average flood level, where possible
- Slope the land so that water runs away from the building
- Inspect drainpipes to make sure they are clear
- Make sure suitable personal protective equipment (PPE) is available, including waterproof boots, puncture-resistant gloves, and respirators, as needed

What can employers do when there is a flood warning?

Employer can:

- Monitor local weather and alerts
 - Initiate workplace emergency flood procedure, and evacuate the workplace if necessary and safe to do so
 - Disconnect gas and electricity, where possible
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What precautions should be taken during a flood?

During a flood:

- Do not cross a flooded area. If you are on foot, fast water could sweep you away.
- Do not drive through flood areas or underpasses, Water may be deeper than it appears, and your vehicle could stall or be swept away by fast water.
- Do not touch electrical equipment if you are wet or standing in water to reduce the risk of electrocution. Assume all electrical wiring is "live" unless otherwise verified.
- Do not go into floodwater if it can be avoided. Flood water may contain sewage, chemicals, and other harmful substances.
- Turn off utilities—shut off the gas and electricity supply if they have not been turned off already and when it is safe to do so.
- Restrict access to the workplace until safety assessments are completed.
- Conduct a post-flood inspection when it is safe to do so.
- Be aware that debris may include sharps such as nails or needles, please see our OSH Answers on [Needlestick and Sharps Injuries](#) and [Working Safety with Sharp Blades or Edges](#) for more information
- If you come in contact with floodwater, wash with soap and clean water as soon as possible.

After a flood:

- Do not return to your workplace until local authorities have advised it is safe to do so.
- Conduct a post-flood inspection when it is safe to do so.
- Make sure the building is structurally safe before returning. Look for buckled walls or floors, holes in the floor, broken glass, and other potentially dangerous debris.
- If you suspect that your drinking water has been contaminated, don't drink it.

- Flooding may cause power outages. Never use gas-powered appliances (such as generators, barbeque, camp stoves, or unvented fireplaces) indoors to prevent carbon monoxide poisoning.
 - Do not use any appliances, heating, pressure, or sewage system that has been affected by flood waters until it has been thoroughly cleaned, dried, and inspected by a qualified person. Pump out water gradually and ventilate your workplace or home.
 - Monitor mould growth and air quality. Please see our OSH Answers on [Indoor Air Quality](#) and [Indoor Air Quality - Moulds and Fungi](#) for more information.
 - Use personal protective equipment (PPE) such as rubber boots, puncture-resistant gloves and masks. For more information please see our OSH Answers on [Personal Protective Equipment Fact Sheets](#) for more information.
 - Follow the steps outlined in the OSH Answers document on [Flood Clean-up](#).
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