

Give cold stress the cold shoulder

Preventing frostbite and hypothermia when working in frigid temperatures.

Ontario winters can be brutally cold and bring messy precipitation and heavy snowfall. For construction workers, powerline technicians, and certain transportation industry workers, enduring frigid temperatures or wet conditions can be challenging.

Whether you're working outside or in a refrigerated space, spending time in the cold is a serious physical health hazard. According to the Canadian Centre for Occupational Health and Safety (CCOHS), the effects of Arctic climate change could send frigid polar air farther south, causing more extreme cold events in Canada. This increases the risk of outside workers experiencing "cold stress" conditions like frostbite, hypothermia, and musculoskeletal injuries.

Fortunately, we have the knowledge and tools to help protect workers. Employers can enact engineering and administrative controls—and ensure workers have appropriate protective clothing. And everyone at the workplace can be trained to recognize and respond to cold-related injury or illness in themselves or others.

The effects of cold stress

When you're cold, your body protects its vital organs by pushing blood to your torso and restricting blood flow to your skin. This can make it hard to maintain your core temperature. When your body can't stay warm, you're at risk of:

Frostbite

Prolonged exposure to cold reduces blood flow, leaving your skin vulnerable to freezing. Wet skin and clothes draw heat from your body even faster, making things worse. With mild frostbite, skin may tingle painfully and look yellowish or inflamed. Without intervention, it turns dark purple or black (possibly breaking out in blisters), blood vessels and nerves become damaged, and you lose sensation in the affected area. Frostbitten skin is vulnerable to infection, which could require surgery or amputation.

Hypothermia

Intense and/or prolonged cold can lower your core temperature—with potentially fatal consequences. Hypothermia starts with pain in any exposed body parts. Prolonged exposure worsens the symptoms; numbness, vigorous shivering, lack of coordination or speech, and

unresponsiveness develop in mild to moderate cases. In severe cases, shivering stops, the body stiffens, and breathing slows or ceases altogether.

Musculoskeletal injuries

Cold muscles are stiff muscles. Stiff muscles restrict movement and are more vulnerable to sprains and strains. When it's too cold or you touch cold materials, your hands and/or fingers may become numb, putting you at risk of misjudging the amount of force needed to perform a task. This can lead to injury from overexertion or hyperextension.

Managing cold stress risks

The surest way to prevent cold stress is to avoid working in cold conditions. But that's not always an option. If outdoor work is necessary, employers can put controls in place and help workers recognize and manage cold stress symptoms.

Engineering controls

- Ensure equipment to be used in cold conditions can be operated safely with gloved hands.
- Cover exposed tool handles with thermal insulating material.
- Allow regular breaks. Make heated shelters available near the work area.

Administrative controls

Workers should be taught to identify cold stress symptoms, respond appropriately, and perform first aid if necessary. At minimum, training should cover:

- Appropriate actions for extreme weather conditions
- Safe work practices
- Protective clothing and equipment
- First aid for frostbite and hypothermia

Ontario has no legislated exposure limits for working in cold environments, so employers, supervisors, and workers must take all reasonable precautions to avoid cold stress. Whether that means scheduling shorter work shifts, enforcing cold-weather clothing standards, or watching for signs of cold stress, everyone can make sure cold-related hazards and controls remain hot topics throughout the winter.





Clothes to combat the cold

Protective clothing made of wool or synthetic fibres is recommended when temperatures drop below 4°C. Select it based on weather, exposure duration, and work tasks.

It should also be worn in layers: a thin, close-fitting base layer to absorb moisture from the skin; a thicker mid-layer, like a wool sweater; and a water and wind resistant jacket that can be tightened at the waist, neck, and wrists for greater protection. And don't forget:



Insulated gloves if the temperature falls below 4°C for light work and -7°C for moderate work.



Felt-lined boots with removable felt insoles, rubber lower shells, and leather uppers. Preferably waterproof.



Thick socks—or layer one thin pair (of silk, nylon, or thin wool) and one slightly thicker pair.



A close-fitting cap under your hard hat, provided it doesn't obstruct the stability of the hat. Always perform a fit test before starting work.



Approved glasses or goggles to guard against glare from the snow, blowing snow/ice crystals, and high winds.



Cold stress first aid



LEARN more about signs and symptoms of cold-related conditions and how to treat them, by downloading the Cold Stress chapter of IHSA's *Construction health and safety manual* (M029): ihsa.ca/hsm

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Hosted by Ken Rayner

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