



Cold Stress Prevention

Maintaining a safe work environment while [working in the cold](#) requires consideration of environmental factors such as air temperature, wind speed, and humidity. These factors affect how our bodies perceive temperature and can increase the risk of cold-stress-related illnesses and injuries such as [hypothermia and frostbite](#). Cold exposure is a recognized occupational health and safety hazard, as it can reduce dexterity, concentration, and reaction time, increasing the risk of slips, trips, falls, and other workplace injuries. Wearing appropriate insulated clothing and limiting prolonged exposure to the cold by following a work/rest schedule can help reduce these risks.

Tips for Working in the Cold

Appropriate Clothing

Protect yourself from the elements by wearing appropriate insulated clothing based on current or forecasted weather conditions. Cover all extremities by wearing well-insulated, slip and water-resistant winter boots, along with a hat, gloves or mitts, and face protection.

- ❖ **Dress in Layers** – When working outdoors, dress in layers to insulate the body and adapt to temperature changes. Layers should include: a base layer of lightweight, breathable, moisture-wicking material worn close to the body; a mid-layer designed to retain heat such as fleece, down, or synthetic insulation; and an outer shell made of wind- and water-resistant material that fits comfortably over other layers without restricting movement.
- ❖ **Stay Dry** – Maintaining a core body temperature of approximately 37°C (98.6°F) is critical for normal body function. Wearing damp or wet clothing can rapidly lower body temperature, significantly increasing the risk of cold-stress-related illness or injury. Workers should remain aware of changes in body temperature throughout the day and adjust activity levels, layering, and pacing as needed to reduce excessive sweating. Spare clothing such as dry socks, gloves, hats, and insulated underlayers should be brought and changed into as required to help maintain warmth and comfort.
- ❖ **Personal Protective Equipment (PPE)** – Appropriate insulated PPE should be worn based on weather conditions. Review additional PPE needs for cold-weather use, such as face protection, other high-visibility garments sized to fit over layered clothing and insulated protective footwear.

Work/Rest Schedule

Limit prolonged exposure to cold by practicing a [work/rest schedule](#). These schedules allow for regular warmup breaks and help prevent cold-stress-related illness and injury. Schedules vary depending on air temperature, wind speed, and humidity. The *PEI Occupational Health and Safety Act General Regulations*, Part 42.1 Extremes of Temperature, follows the Threshold Limit Values (TLVs) published by the American Conference of Governmental Industrial Hygienists.

Proper Nutrition and Hydration

Maintaining core body temperature is not possible without proper nutrition and hydration. Working in cold weather often requires more energy than working in warmer conditions. Eat a balanced diet that contains the five main food groups and aim for adequate fluid intake, of six to eight 8-oz (250-ml) glasses of water per day. Staying hydrated is especially important during the winter months and while working in the cold, as dehydration can occur even when you do not feel thirsty and can increase the risk of cold-related stress and fatigue.

Be Prepared

During winter months, weather conditions can become more unpredictable and extreme. Be prepared for any winter situation by monitoring weather forecasts, using cold-stress training and resources, and reviewing your workplace winter weather and emergency response plans.

Resources

- ❖ [CCOHS: Working in the Cold Infographic](#)
- ❖ [OHCOW: Working in the Cold Infographic](#)
- ❖ [WCB: Guide to Cold Stress at Work](#)
- ❖ [Government of Canada: Cold Weather Physical Performance, Nutrition and Hydration](#)



Working in the Cold



The **toes, fingers, ears and nose** are at greatest risk because they do not have major muscles to produce heat. **Mental alertness** is also reduced.

- **Chilblain** – redness, swelling, tingling and pain
- **Frostnip** – caused when top layers of skin freeze, turning white, numb and hard, but deeper tissue feels normal
- **Frostbite** – occurs when tissue temperature falls below the freezing point or when blood flow is obstructed; symptoms include inflammation of the skin in patches and slight pain

In severe cases, there could be tissue damage without pain, or burning or prickling sensations that result in blisters.

- **Immersion foot/Trenchfoot** – caused by prolonged wet or cold feet; symptoms include tingling, numbness, itching, pain, swelling, and blisters

What the law says

Some jurisdictions provide a range of acceptable temperatures (http://bit.ly/cold_legislation) for specific circumstances. Others use the Threshold Limit Values® for cold stress published by the American Conference of Governmental Industrial Hygienists (ACGIH) as occupational exposure limits or guidelines.

Where there are no maximum exposure limits for cold working environments, there are guidelines that can be used to conduct work/task assessments, create safe work plans, and monitor conditions.

Employers should:



- Choose equipment with thermal insulating materials and tools that can be operated with gloves.
- Survey and monitor the temperature.



- Use a buddy system to watch for symptoms in others.
- Adjust the pace or rate of work (not too low that a person becomes cold, nor too high and cause heavy sweating or wet clothing).
- Allow time for new workers to become accustomed to the conditions.
- Provide or make sure that protective clothing is worn at or below 4°C, including layers of warm clothing, with an outer layer that is wind-resistant, a hat, mittens or insulated gloves, a scarf, neck tube or face mask, and insulated, waterproof footwear.



- Train managers, supervisors and workers on symptoms, safe work practices, re-warming procedures, proper clothing practices, and what to do in case of cold injury.
- Clearly outline emergency procedures, with at least one trained person available at all times.



Workers need to maintain a core body temperature of **+37°C (+98.6°F)** for normal body functioning as well as to provide energy for activity.



Hypothermia is the most severe cold injury. The excessive loss of body heat can be fatal. Warning signs can include **nausea, fatigue, dizziness, irritability** or **euphoria, pain in the extremities** (hands, feet, ears) and **severe shivering**. Move workers to a heated shelter and seek medical advice when appropriate.

