

University of Rochester

Cold Stress Guidelines

OS-G007

Purpose:

This document is intended to raise employee awareness regarding the risks associated with exposure to cold temperatures. It is also intended to inform employees on how to prevent exposures to these conditions. For the purpose of this guideline, extreme cold will mean temperatures below zero, or wind chills below zero degree Fahrenheit

Scope:

Working in a cold environment puts you at risk for **cold stress**. This includes workers such as snow cleanup crews, public safety officers, facilities, central utilities and parking and transportation workers as well as those who work in cold rooms. According to the Occupational Safety and Health Administration (OSHA), it's important to be aware of the **risk factors that contribute to cold stress**, which include:

- Wetness/dampness, dressing improperly, and exhaustion
- Predisposing health conditions such as hypertension, hypothyroidism, and diabetes
- Poor physical conditioning

In a cold environment, the majority of the body's energy is used to keep the internal core temperature warm. Therefore, exposed skin and extremities are prone to loss of heat resulting in **frostbite (frozen tissue) and hypothermia (low body heat)**.



Symptoms of frostbite include:

- Reddened skin develops gray/white patches.
- Numbness
- Firm or hard skin
- Blisters

Symptoms of hypothermia include:

- Shivering
- Loss of coordination
- Fumbling with items
- Confusion, disorientation
- Inability to walk
- Dilated pupils
- Slowed respiration

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If you see someone experiencing frostbite or hypothermia:

- **Call x13 or 911 immediately in an emergency;** otherwise seek medical assistance as soon as possible.
- Move the person to a warm, dry area.
- Remove wet clothes and replace with dry clothes, cover the body (including the head and neck) with layers of blankets; and with a vapor barrier (e.g. tarp, garbage bag). Do **not** cover the face.
- Gradually warm extremities (hands, feet), with mild frostbite by soaking for 20-30 min in warm (NOT hot) water until skin returns to normal color or loses its numbness. For face or ears apply a warm washcloth. Do NOT rewarm frostbitten skin with direct heat.
- If medical help is more than 30 minutes away:
 - Give warm sweetened drinks if alert (no alcohol), to help increase the body temperature. Never try to give a drink to an unconscious person.
 - Place warm bottles or hot packs in armpits, sides of chest, and groin. Call 911 for additional rewarming instructions.

Guidelines:

To prevent Cold Stress:

- **Dress Properly**

Wear at least three layers of loose fitting clothing. Layering provides better insulation. Do not wear tight fitting clothing.

- An inner layer of wool, silk or synthetic to keep moisture away from the body.
 - A middle layer of wool or synthetic to provide insulation even when wet.
 - An outer wind and rain protection layer that allows some ventilation to prevent overheating.
 - Wear a hat or hood to help keep your whole body warmer. Hats reduce the amount of body heat that escapes from your head.
 - Use a knit mask to cover the face and mouth (if needed).
 - Use insulated gloves to protect the hands (water resistant if necessary).
 - Wear insulated and waterproof boots (or other footwear).
- **Stay dry in the cold** because moisture or dampness, e.g. from sweating, can increase the rate of heat loss from the body.
 - **Supervisors should check up on their employees more frequently when working in extreme cold temperatures and offer warming breaks.**
 - **Keep extra clothing (including underwear) handy** in case you get wet and need to change.
 - **Drink warm sweetened fluids** (no alcohol).
 - **Take frequent breaks and don't overexert yourself as working in the cold puts a tremendous strain on the body**

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Administration:

Additional Resources

<http://www.safety.rochester.edu/ih/guidelines/coldrooms.html>

<https://www.osha.gov/SLTC/emergencypreparedness/guides/cold.html>

National Institute for Occupational Safety and Health (NIOSH) - Cold Stress -
<http://www.cdc.gov/niosh/topics/coldstress/>

https://www.cdc.gov/phpr/documents/hypothermia-frostbite_508.pdf

<https://www.weather.gov/safety/winter>

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