



Working Safely in the Cold

Keys to Protecting Workers when Temperatures Drop

Presented By BHHC Loss Control

October 2025

7028

Number of deaths in US attributed to excessive cold from 2016 to 2020. *(From AAFP)*

3621

Number of deaths in US attributed to excessive heat during the same period of 2016 to 2020. *(From AAFP)*

95° F – 82.4° F

95 degrees F is the body temperature when Hypothermia sets in. Unconsciousness or death when body temperature drops below 82.4 degrees F.

5-10 minutes

Time for Frostbite to set in in -5°F weather with moderate wind. *(UCHealth)*

Case Study

Worker Dies from Hypothermia After Being Stranded in Cold Weather

- The worker was part of a small crew performing maintenance in a rural location
- When their vehicle became stuck, the worker attempted to walk for help in sub-zero temperatures without adequate cold-weather gear
- He was later found deceased due to hypothermia

AGENDA

October 2025

1. Understand the Factors that affect cold stress – both indoor and outdoor
2. Discuss how to identify Hypothermia and steps to prevent it
3. Discuss how to identify Frostbite and respond to the risk
4. Review strategies for Emergency Preparedness when driving in cold weather
5. Identify the key methods of protecting workers for extreme cold

We Will Focus on Best Practices

...with a hint of compliance.

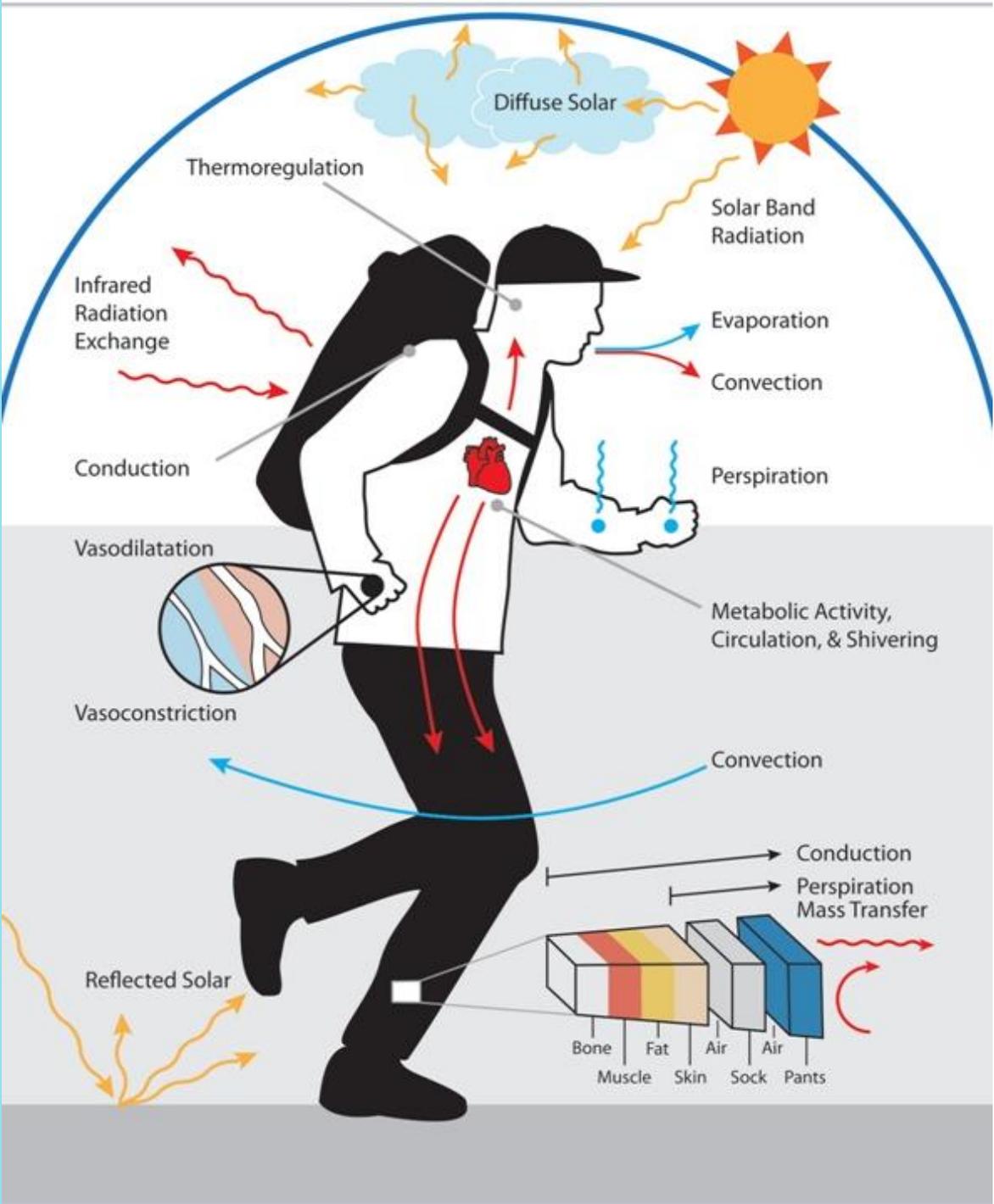
The goal of an employee safety effort is to prevent injuries and increase the involvement of staff in your safety efforts.

- Regulatory standards are *minimum* requirements. Best in class employers go above and beyond.
- Remember that every workplace is different. Find the risk potential and address it proactively.

From: Milwaukee Journal Sentinel

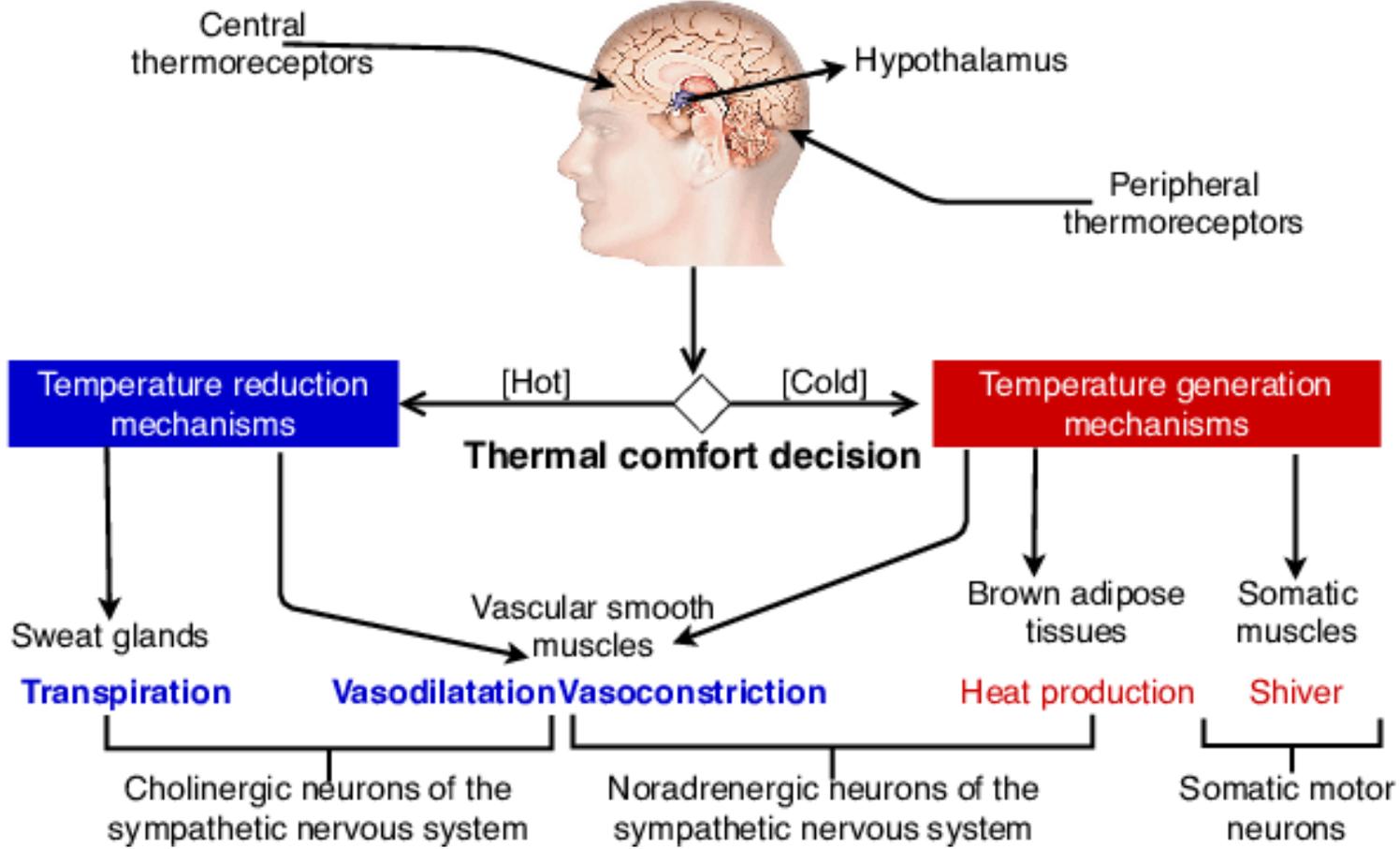


Understanding the Factors



- Temperature of the air surrounding the body
- Body temperature
- Air movement around the body
- Body movement
- Length of exposure

How Humans Manage Temperature



Employer Controlled Factors

Clothing

- Proper clothing helps retain body heat and prevents hypothermia
- Layering allows for better insulation and flexibility in temperature control
- Waterproof outer layers keep inner garments dry, reducing cold stress
- Covering extremities protects against frostbite on fingers, toes, ears, and nose
- Insulated headwear reduces significant heat loss through the scalp
- Well-fitted clothing maintains warmth without restricting movement or circulation

Activity Level

- Physical activity generates body heat, helping maintain core temperature in cold environments
- Overexertion can lead to sweating, which increases heat loss and risk of hypothermia
- Low activity levels may not produce enough heat, especially in extreme cold, increasing frostbite risk
- Frequent movement improves circulation, reducing the chance of cold-related injuries in extremities
- Rest breaks in warm environments are essential to prevent fatigue and cold stress during prolonged activity

A blue-tinted photograph of a snowy construction site. In the foreground, there are snow-covered branches and a yellow excavator. In the background, a building is under construction, with a crane visible. The word "Hypothermia" is overlaid in white text on the left side of the image.

Hypothermia

Overview of Hypothermia



What Happens

- Prolonged exposure to cold causes the body to lose energy faster than it is produced
- Body temperature drops to lower than normal
- Can happen when temperatures are above freezing
- Hypothermia results when ambient temperature is between 30° and 40° F

What Conditions Affect Frostbite

- Aging, allergies, poor circulation, and illness
- Self-imposed conditions, such as drinking, smoking, and taking sedatives also increase risks
- Wet clothing, windy conditions, and poor physical condition



Symptoms of Hypothermia

- Numbness, stiffness, drowsiness, and poor coordination
- Slow or irregular breathing and heart rate
- Slurred speech
- Cool skin and puffiness in the face are common
- May seem apathetic about getting out of cold
- Shivering and teeth chattering is a sure sign that body temperature is too low
- Victim first feels cold then may feel mild pain in extremities
- Victim may seem confused and disoriented; memory lapses
- Worst-case results can cause death

Responding to Hypothermia

- Get victim to where it is warm
- Get them out of wet, frozen, or tight clothing; keep victim dry
- Get them into loose warm clothes or blankets
- Give warm (room temperature) liquids
- Do not give alcohol or substances containing caffeine
- Warm center of body first
- If necessary, seek medical assistance and give CPR

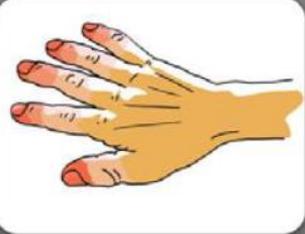
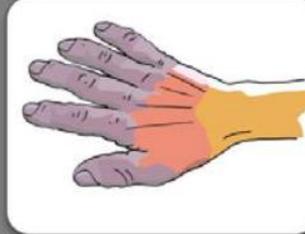
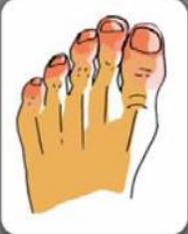
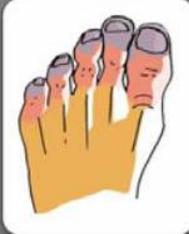
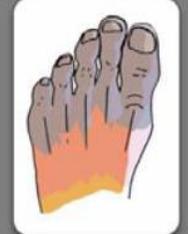


HYPOTHERMIA FIRST AID

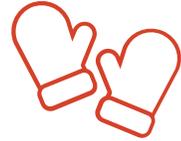
- Move person to a warm place.
- Remove wet clothing.
- Warm center of the body first - chest, head, neck and groin.
- Give warm beverages if conscious.
- Wrap body and head in a warm blanket.
- Administer CPR if unconscious.

Frostbite

Grades of Frostbite

Absence of cyanosis	Cyanosis on distal phalanx	Cyanosis up to MP joint	Cyanosis proximal to MP joint
			
			
Grade 1 No amputation of bone	Grade 2 Moderate risk of amputation	Grade 3 High risk of amputation	Grade 4 Risk of amputation 100%

Overview of Frostbite



What Happens

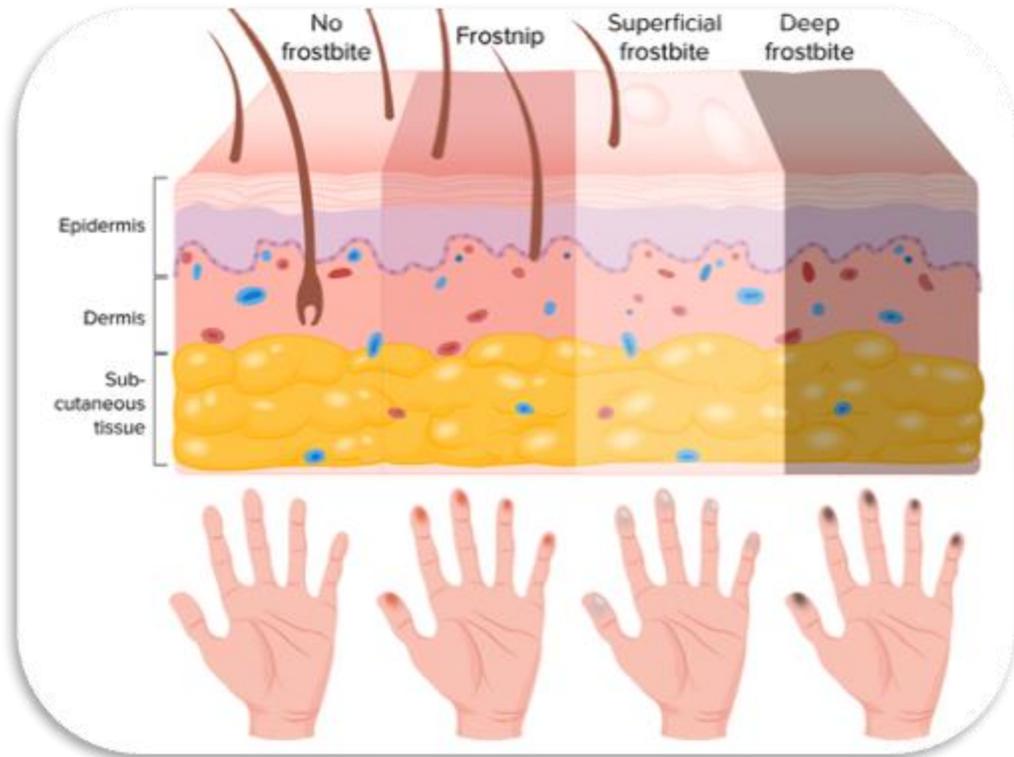
- Most serious, and second most common, cold exposure hazard
- Nose, ears, cheeks, fingers, and toes most often affected
- Freezing causes blood vessel constriction
- Results in lack of oxygen, excess fluid buildup, blistering, and tissue death
- May not be aware anything bad is happening
- Do not get enough heat and freezes



What Conditions Affect Frostbite

- Inadequate clothing: Lack of proper insulation or exposed skin
- Medical conditions: Diabetes, poor circulation, exhaustion, and heart conditions
- Infants and older adults are more susceptible
- Previous cold injuries: Having had frostbite before
- Alcohol use and smoking
- Impaired judgment: Poor decision-making in cold environments can delay protective actions

Symptoms



- Recognized by distinct pallor of the exposed skin
- Skin goes from white or grayish yellow, to reddish violet, to black
- Usual feeling of being very cold, then numb
- May get a tingling or aching feeling or brief pain
- Damage to skin sometimes causes blisters
- Constricted blood vessels impair blood flow
- Can cause permanent tissue damage
- Victim can become unconscious
- Death may result from heart failure
- If necessary, seek medical assistance and give CPR

Responding to Frostbite

Degree	First (frostnip)	Second	Third	Fourth
Pathophys	Partial-skin freezing	Full-thickness skin freezing	Tissue loss involving entire thickness of skin	Extension into subcutaneous tissues, muscle, bone, and tendon; little edema
Symptoms	Stinging and burning, followed by throbbing	Numbness followed by aching and throbbing	Extremity feels like a "block of wood" followed by burning, throbbing, shooting pains	Deep, aching joint pain
Course	Numbness, erythema, swelling, dysesthesia, desquamation (days later)	Substantial edema over 4-6 hours; skin blisters form within 6-24 hours; Desquamate and form hard black eschars over several days	Hemorrhagic blisters form and are associated with skin necrosis and blue-gray discoloration	Skin is mottled with nonblanching cyanosis and formation of deep, dry, black eschar
Pain with rewarming	Minimal	Mild to moderate	Severe	None
Prognosis	Excellent	Good	Often poor	Extremely poor
Image				

- Don't rub affected part
- Don't use hot baths, or heat producing devices
- Don't break blisters
- Warm the frozen part with clothing, blankets, or with room temperature water
- Once warm, exercise the part
- Exception: Do not walk on frostbitten feet
- Get immediate medical assistance

Emergency Preparedness for Drivers



Preparation is the Cost of Entry

- Serviceable clothing (sweatshirt, jeans, coveralls, coat)
- Distilled water and anti freeze
- Easily stored food (chips, candy bars, cookies, some canned foods, etc.)
- Matches, in a waterproof container
- Large candles
- Tool kit (pliers, screwdrivers, crescent wrench, jumper cables, duct tape electrician's tape, etc.)
- A couple quarts of motor oil and multipurpose lubricant, such as WD 40
- Ice scraper, sand or Kitty Litter, traction mat, shovel
- Road atlas
- Reflective triangles or flares
- Couple blankets or comforters

GET YOUR VEHICLE WINTER READY

Check your tires for wear and tear



Get a tune, including oil change & battery check

Check your headlights, taillights, & turn signals



Inspect your windshield wiper

Check your vehicles door locks & latches for icing



Keep your fuel tank full

Don't use your windshield wipers to remove snow. Use a brush or ice scraper



Keep your vehicle undercarriage clean of accumulated road salt

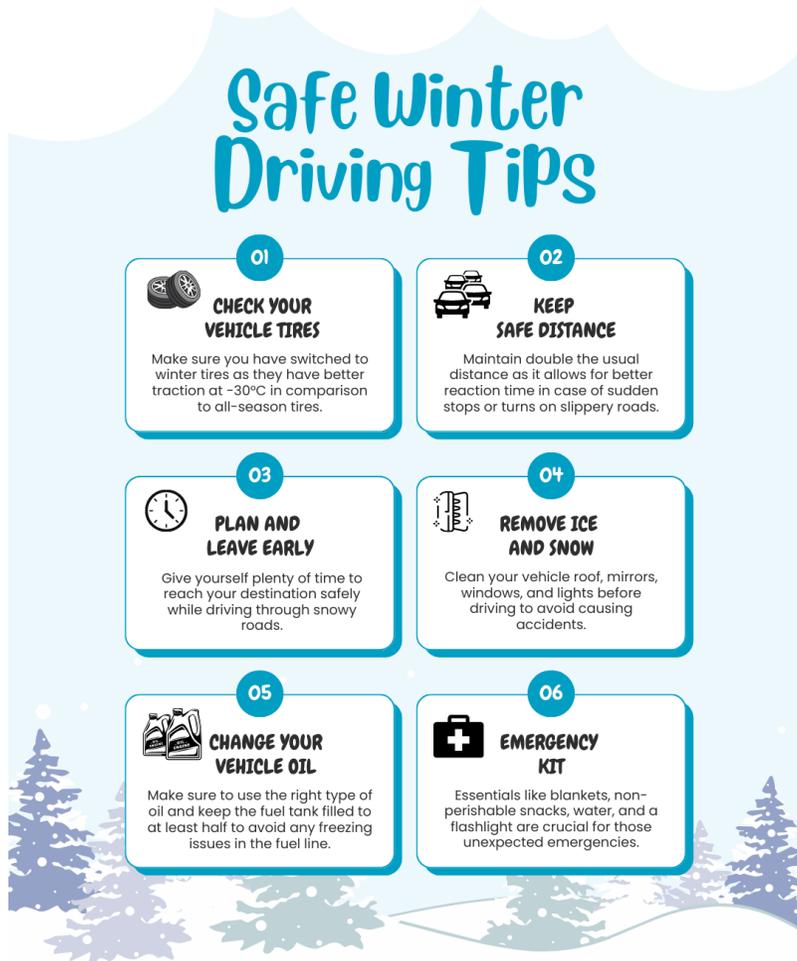


Tips → Communicating to Engaging

The two most important items to have:

- A health respect for your own safety in cold weather
- A cellular phone

Safe Driving Behaviors for Cold Weather



- Slow down and increase following distance to account for reduced traction on icy or snowy roads
- Clear all windows, mirrors, and lights of snow and ice before driving to ensure full visibility
- Use headlights during the day to improve visibility to other drivers in low-light conditions
- Avoid sudden movements such as sharp turns or hard braking, which can cause skidding
- Keep an emergency kit in your vehicle with blankets, food, water, flashlight, and a shovel
- Monitor weather and road conditions before traveling and delay trips if conditions are hazardous

A photograph of several workers in heavy winter gear, including jackets, hats, and gloves, shoveling snow in a snowy environment. The workers are positioned in a line, each with a shovel, working to clear a path. The background shows a snow-covered landscape with bare trees and a vehicle partially visible. The entire image is overlaid with a semi-transparent blue filter.

General Protection from Extreme Cold for Workers

Who Has Guidelines?

Work/Warm-up Schedule for a 4-Hour Shift

Air Temperature--Sunny Sky		No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind	
°F (approximate)	°C (approximate)	Maximum Work Period	Number of Breaks								
-26 to -28	-15 to -19	(Normal Breaks) 1		(Normal Breaks) 1		75 min	2	55 min	3	40 min	4
-29 to -31	-20 to -24	(Normal Breaks) 1		75 min	2	55 min	3	40 min	4	30 min	5
-32 to -34	-25 to -29	75 min	2	55 min	3	40 min	4	30 min	5	Non-emergency work should cease	
-35 to -37	-30 to -34	55 min	3	40 min	4	30 min	5	Non-emergency work should cease			
-38 to -39	-35 to -39	40 min	4	30 min	5	Non-emergency work should cease					
-40 to -42	-40 to -44	30 min	5	Non-emergency work should cease							
-43 & below	-45 & below	Non-emergency work should cease									

Schedule applies to any 4-hour work period with moderate to heavy work activity; with warm-up periods of ten (10) minutes in a warm location and with an extended break (e.g. lunch) at the end of the 4-hour work period in a warm location.

Adapted from ACGIH 2012 TLVs

Who Has Guidelines?

DAILY COLD STRESS PREVENTION					
Mark with a "X" when each task has been completed.					
TEAM MEMBER	PPE CLOTHING CHECK <small>WASH ALL PROTECTIVE GEAR BEFORE WEARING IT AGAIN</small>	OUTDOOR TEMPERATURE <small>WEAR TEMPERATURE MONITORING</small>	SHELTER/WARMING STATION <small>NEVER LEAVE YOUR STAFF HERE</small>	BUDDY CHECK <small>CHECK YOUR TEAM MEMBERS</small>	HYDRATION <small>WEAR AND USE PROTECTIVE GEAR</small>

Personal Protective Equipment



Wear layered clothing

Use moisture-wicking base layers, insulating middle layers (like fleece or wool), and windproof/waterproof outer layers.



Cover the head and neck

Wear a hat, balaclava, or hood to prevent heat loss from the scalp and neck.



Stay dry

Change out of wet clothing immediately to prevent hypothermia.



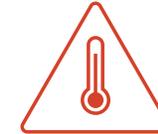
Protect extremities

Use insulated gloves, thermal socks, and boots rated for sub-zero temperatures.



Use face protection

In extreme cold or wind, wear a face mask or scarf to shield the nose and cheeks from frostbite.



Use hand and foot warmers

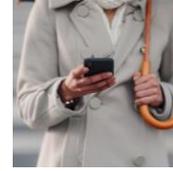
Disposable or rechargeable warmers can help maintain circulation in fingers and toes.

Organizational and Worksite Practices



Schedule work during warmer hours

Avoid early mornings and late evenings when temperatures are lowest.



Monitor weather conditions

Use forecasts and alerts to plan work and respond to changing conditions.



Provide heated shelters

Ensure access to warming stations or heated break areas.



Train workers

Educate on recognizing symptoms of cold stress, frostbite, and hypothermia.



Rotate workers

Limit exposure time by rotating tasks and allowing frequent warm-up breaks.



Equip with emergency supplies

Stock vehicles and work areas with blankets, hot packs, food, water, and communication tools.



General Protective Measures

- Prevention is the best way to deal with cold stress
- Don't drink alcohol, bathe, smoke, or take drugs before being exposed to cold
- Dress in loose layers of dry clothing
- Cover hands, feet, face, and head
- In cold environment, keep moving
- Take regular breaks in warm places

AGENDA

Recap

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Questions?

Email additional questions to losscontrol@bhhc.com