

Staying Safe in Hazardous Cold Weather

Working in winter conditions can be done when the right preparations are taken.

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How do you adequately prepare for working safely in cold weather? When the National Science Foundation's Office of Polar Programs organizes a team to travel to Antarctica to drill ice cores, preparations are extreme. Drillers wear tight-cuff wet gear over cold weather gear designed for extreme conditions, as well as gloves, hoods, cold weather face masks, and chemical vapor respirators. The respirators are needed to avoid exposure to some of the solvent-like acetates used in ice drilling.

In the warmer climate of Alaska, where normal well drilling equipment is used, additional accessories are still required because of adverse weather conditions. Portable gasoline or diesel heaters are needed for both humans and equipment at the sites. Tents and sheds are erected to protect workers from cold winds and storms. In extremely adverse conditions, shelters are sometimes constructed over the drill site to both protect rigs and maintain comfortable working temperatures.

Even in the dead of winter in the northernmost regions of the United States, such extreme measures may not be necessary. But exposure to cold weather should never be taken lightly, and preparations are always important.

The coldest location I've ever worked in was Fort Peck, Montana, but the coldest I've ever been was in New Jersey in November. I had not prepared adequately for temperatures that fell only slightly below 40°F. The cowboy boots I chose to wear to the work site were a big mistake. My feet were frozen the whole time. Once your feet get cold, you're a useless worker. I bought a pair of insulated waterproof boots after that experience, and to this day I take them with me anytime there's the possibility of cold weather.

Many of the most useful measures to protect yourself from the cold are common sense. So don't wait for an unpleasant experience to err on the cautious side. Make sure you select proper clothing for cold, wet, or windy conditions.

Employers should have extra insulated clothing available for situations where temperatures drop unexpectedly below 40°F. Layer clothing to adjust to changing environmental temperatures. Wear a hat and gloves in addition to polypropylene underwear that will keep water away from the skin. Take frequent short breaks in a warm, dry shelter to allow the body to warm up. Perform work at the warmest

part of the day. Use the buddy system and avoid exhaustion or fatigue because energy is needed to keep muscles warm. Drink warm, sweet beverages like sugar water and sports drinks, but avoid drinks with caffeine or alcohol. Prepare for the cold with a warm, high-calorie meal such as pasta.

Certain workers are more at risk of distress from cold exposure than others. These include individuals with predisposing health conditions such as cardiovascular disease, diabetes, and hypertension. Also at greater risk are workers who are in poor physical condition, have a poor diet, are older, or take certain medications. But all workers can be at risk of frostbite and even hypothermia if the conditions are right but the preparations were not.

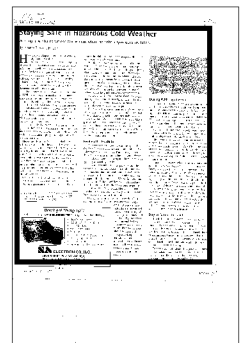
Fending Off Frostbite

Everyone should know the warning signs of frostbite: The skin becomes hard and numb and its color is pale or waxy white. These are signs that deep layers of skin and tissue have begun to freeze. Fingers, hands, toes, feet, ears, and the nose are most typically affected by frostbite.

If frostbite is suspected, the person should be moved to a warm, dry area and not left alone. It's very important that the frostbitten person does not try to rub the affected area because rubbing causes damage to the skin and tissue. Wet or tight clothing that may cut off the blood flow to the affected area should be removed, and the area should be gently placed in warm (105°F) water. The water temperature should be monitored to slowly warm the tissue for approximately 25 to 40 minutes.

Don't pour warm water directly on the affected area because it will warm the tissue too quickly,

causing tissue damage. After the area is warmed, it may have a feeling of burning or numbness and may be puffy and blister. When normal feeling, movement, and skin color return, the affected area should be dried and wrapped to keep it warm. The skin cannot be allowed to get cold again as this will cause severe tissue damage. Of course, seek medical attention as soon as possible.



Dealing With Hypothermia

Hypothermia is another dangerous condition that can be brought on by cold conditions. Symptoms include fatigue or drowsiness, uncontrolled shivering, cool bluish skin, slurred speech, clumsy movements, or irritable, irrational, or confused behavior. The conditions for hypothermia can be deceiving. It can occur when land temperatures are above freezing or water temperatures are below 98.6°F.

Cold-related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing. When the body is unable to warm itself, not only can serious cold-related illnesses and injuries occur, permanent tissue damage and death may result. At 30°F and no wind, skin can be exposed for an hour before it begins to freeze. When a 30-mile per hour wind is added to those 30 degrees, exposed flesh can begin to freeze within a minute.

Hypothermia occurs when the normal body temperature drops to or below 95°F. This is a medical emergency and 9-1-1 or an ambulance should be called immediately. While waiting for emergency assistance, move the person to a warm, dry area and replace any wet clothing with warm, dry clothing or

wrap the person in blankets. Have the person drink warm, sweet drinks and avoid caffeine or alcohol. The person should try to move their arms and legs to create muscle heat, but if they are unable to do this, place warm bottles or hot packs in the armpits, groin, neck and head areas. As with frostbite, do not rub the body of a hypothermic person. However, unlike frostbite, do not place the person in warm water as it may cause their heart to stop.

Staying Safe in the Cold

The drillers in the Antarctic prove that regardless of how cold conditions get, work can usually continue in a healthy and safe environment as long as one recognizes the environmental and workplace conditions that lead to potential cold-induced illnesses and injuries. This requires a workforce that is properly trained to learn the signs and symptoms of cold-induced medical issues and what to do to help the worker if problems occur.

To access a list of industrial hygiene consultants who specialize in cold weather safety issues, visit the Web site of the [American Industrial Hygiene Association](http://www.aiha.org) at www.aiha.org and click on "Consultants Listing" on the left-hand menu. *WWW*

