



FAST FACTS

Office of Compliance - -
 Advancing workplace rights, safety, health, and accessibility in the Legislative Branch

Working Safely in Cold Conditions

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Cold weather environments present many hazards and can be life threatening. Cold impairs performance of complex mental tasks and reduces dexterity. Low temperatures, wind and wetness are the three main challenges our bodies face in cold weather environments. The body loses heat through radiation, conduction, convection and evaporation.

Cold stress is an excessive exposure to cold. It can occur when the body is unable to warm itself. The body is threatened both mentally and physically when exposed to too much cold. Workers who are exposed to indoor or outdoor cold environments are at risk. Extremely cold or wet weather is a dangerous situation that can cause occupational illness, injuries or death. Cold stress can occur at temperatures as high as 60 °F (15.5°C). In fact, most cold stress injuries, do not occur during extremely cold weather.

Cold stress is most often associated with outdoor workers such as builders, road workers, and police. However, even indoor workers such as those working around freezers and refrigerators are at risk for cold stress.

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Prevention

Since more accidents are likely during cold conditions, it is important to take preventative measures to protect yourself. Measures to prevent cold stress include environmental monitoring, engineering controls, and personal protective equipment (PPE). Always monitor your physical condition and that of your co-workers. This can be accomplished by conversing with each other.

Weather should be checked before going outside and be monitored throughout the work shift. Sun and wind speed can have a significant effect on temperature. When possible stay out of the wind and in the sun. Move to warm, sheltered locations during breaks. See chart below for guidance on work breaks during cold weather work activities.

Table 1: TLVs Work/Warm-up Schedule for Four-Hour Shift

Air temperature - sunny sky		No noticeable wind		8 k/hr wind (5 mph)		16 k/hr wind (10 mph)		24 k/hr wind (15 mph)		32 k/hr wind (20 mph)	
°C(approx.)	°F(approx.)	Max 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 -30°	-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 minutes in a warm location and with an extended break (e.g. lunch) at the end of the 4-hour period in a warm location.



Employers should pace work to avoid sweating and design equipment for work below the freezing point. This means covering metal bars or handles with insulating material, and designing equipment so it can be operated safely wearing gloves.

It is important to stay hydrated. When it is cold, people do not feel thirsty. Our body systems are working harder. Heavy clothing and gear, quickly evaporating sweat, and respiratory fluid lost through breathing can dehydrate the body.

When you have to work in cold weather, wear several layers of loose clothing. Wear the appropriate PPE for the weather. Cold weather gear includes, but is not limited to gloves, coat, boots, hat, face mask, shields, glasses, and long underwear. Protect your extremities: ears, face, hands and feet. Up to 45% of heat is lost through your head. Proper footwear is especially critical, because when feet

are wet, we lose heat 25 times faster than when feet are dry. Wool and synthetic fibers are recommended over cotton because they retain heat when wet.

Cold-Related Illnesses

Dangerous overcooling of the body and freezing of exposed extremities are the most serious concerns at cold temperatures.

General warning signs and symptoms include:

- Shivering
- Fatigue
- Irritability
- Loss of coordination
- Numbness
- Decreased heart rate
- Confusion
- Disorientation
- Reddening of the skin
- Tingling, stinging, or aching



Frostbite

Frostbite is an injury to the body caused by freezing. The key is to recognize and treat early symptoms. This most often affects the nose, ears, cheeks, chin, fingers or toes. There are several levels of frostbite. Warning signs include: numbness, aching, tingling or stinging and bluish, pale or waxy skin. Victims of frostbite should get to a warm room as soon as possible and avoid walking on frostbitten feet. To reheat the frostbitten area, immerse it in warm (not hot!) water or warm the affected area using body heat.

Hypothermia

Hypothermia is a medical emergency. It occurs after prolonged exposure to cold temperatures. The body has used up its stored energy and can no longer produce heat to keep warm. Symptoms include: fatigue, loss of coordination, confusion, and disorientation. In severe cases victims can have blue skin, dilated pupils, slowed breathing, and loss of consciousness.

To render aid, move the victim to a warm room and remove any wet clothing. Always remember to warm the core of their body by first using blankets or skin to skin contact. If the individual is conscious, warm beverages may help increase their body temperature.

Trench Foot

Trench foot can occur when feet are exposed to wet and cold conditions for a prolonged period of time. It can occur at temperatures as high as 60 degrees. Symptoms many include: reddening of the skin, numbness, cramps, swelling, tingling pain, blisters, bleeding under the skin, and ultimately can lead to gangrene. To treat Trench Foot remove wet footwear, dry feet and keep them dry.

Chilblains

Chilblains are benign and caused by repeated exposure of the skin to temperatures ranging from just above freezing to 60 °F (15.5°C). The condition creates ulcers from damaged blood vessels. Symptoms include redness, itching, blistering, and inflammation. To treat chilblains, slowly warm the skin, use creams to reduce itching and swelling, and keep any blisters or ulcers clean and covered.

Remember: Anticipate cold weather conditions and dress appropriately in order to keep your body functioning throughout the activity. Seek medical attention when applicable.

References

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