

The Hazards of Working in Cold Weather

What constitutes extreme cold and its effects vary by region and by the type of work environment. Temperature is one factor to consider another is wind speed. When the air temperature is 40°F, and the wind speed is 35 mph, the effect on the exposed skin is as if the air temperature was 28°F. There also much variation in the type of work where cold can be a factor. Many workers, for example, airline or other transportation ground crews, utility workers, oil and gas workers, snow cleanup crews, sanitation workers, fishing workers, construction workers, parking attendants are often outdoors for extended periods. Some workers may work indoors but the facility or work space is cold by design such as refrigerated cold rooms or lockers, warehouses, underground vaults or tunnels. Some transportation, delivery and postal workers move constantly from a shielded environment like a truck and van to outdoor cold exposure.

What Happens To The Body In Cold Weather.

The first thing is the skin gets cold. Blood vessels in the skin and the extremities (nose, toes, fingers, ears) constrict to reduce heat loss. We may begin to shiver if we continue to lose heat: shivering produces extra heat. Prolonged exposure to cold, however, (especially with increasing wetness or moisture) can soon overwhelm this simple benevolent strategy.

As more heat is lost from our bodies, we become tired and fatigue easily. Blood flow to the extremities is reduced reactions become sluggish and clumsy. As a result risks from slips, trips, and falls, objects being dropped from heights, and getting hit by moving vehicles and equipment increase.

Fluids in our tissue can actually freeze. This is what is meant by *frostbite*. The most common targets of frostbite are the extremities (nose, ears, fingers, and toes). Trenchfoot is a condition like frostbite where the feet become swollen and itchy, and then very painful. Extreme or prolonged cold exposure (usually combined with demanding physical activity) can induce *hypothermia*, a life threatening disorder.

Hypothermia When the body fails to retain and produce heat, core temperatures fall. A victim will shiver uncontrollably, pulse will drop and as the condition

worsens shivering stops and pulse rate, blood pressure, and respiration rates fall significantly. In severe cases of hypothermia, the brain is affected and victims are unable to think clearly or move about safely. The lungs fill with fluid (pulmonary edema). And the heart gives out completely. Warning signs of hypothermia are shivering, exhaustion, confusion, fumbling hands, memory loss, slurred speech, and drowsiness.

Safety and Health Practices for Cold Weather Work

- Develop a cold safe work practicum.
- Schedule outdoor work during the warmest part of the day, and plan a work/rest schedule to avoid prolonged exposure to the cold. *{The America Conference of Governmental Industrial Hygienists {ACGIH} has a useful chart for cold work schedules in their 2019 TLVs and BEI handbook.}*
- Provide heated trailers, shelters, or other warm areas, and take frequent breaks.
- Shield work areas from the wind.
- Employers should provide general and spot heating when work tasks require prolonged exposure. There are many portable heating devices that can be used inside temporary or permanent enclosures: strongly recommend against propane, or gas/diesel heating tubes as they pose significant carbon monoxide CO exposures.
- Working in isolation is a risk, especially in or near water or in damp conditions. A buddy system helps to reduce threats that an isolated employee may face.
- Clothing and gear should be adequate, layered, insulated, loose, and dry with special attention to hands, face, and feet.
- Regular fluid replacement.
- Workers should be made aware of the signs of cold disorders and be trained when to call for prompt medical attention.
- Workers traveling during excessive cold weather should assemble a cold weather survival kit (includes communication device) in case they are stranded.
- Hold periodic safety briefing/meeting to review cold hazards and safety procedures, especially when a cold snap is predicted.

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