

RI Committee on Occupational Safety and Health

The Hazards of Working in Cold Weather

While climate is not the same thing as weather, there's growing evidence to suggest that the now infamous and increasingly familiar polar vortex is appearing outside the Arctic more frequently, because of changes in the jet stream attributed to the warming atmosphere. The impact of climate change helps frigid air escape from the Arctic and swoop southward.

The first thing that happens when exposed to cold 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 fatigued easily. And, as the body gets cold major organs such as the brain and the heart will conspire to conserve and preserve body heat so blood flow to the extremities is reduced. And reactions become sluggish and clumsy. As a result, events like slips, trips, and falls, objects being dropped, if we work near--or drive moving vehicles - -pose more of a threat.

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. In severe cases of hypothermia, the brain is affected and victims are unable to think clearly or move well, which can further worsen their situation.

Warning signs of hypothermia are shivering, exhaustion, confusion, fumbling hands, memory loss, slurred speech, and drowsiness.

Hypothermia When the body fails to retain and produce heat, core temperatures fall. The victim will shiver uncontrollably, pulse will drop and as the condition worsens shivering stops and pulse rate, blood pressure, and respiration rates fall significantly. The lungs fill with fluid (this is called pulmonary edema). And the heart gives out completely.

Safety Procedures for Cold Weather Work

- Provide heated trailers, shelters, or other warm areas, and take frequent breaks.
- Schedule outdoor work during the warmest part of the day, and plan a work/rest schedule to avoid prolonged exposure to the cold.

Workers traveling during excessive cold weather should assemble a disaster supplies kit when storm warnings are issued.

- Shield work areas from the wind.
- Employers should provide general and spot heating when tasks require prolonged exposure, especial fine work that requires bare hands.
- Wear insulated, layered clothing and keep tabs on anyone in the cold environment, especially near water.
- Regular fluid replacement; warm, caffeine free, non-alcoholic. Also, no tobacco. (The danger of hypothermia is increased by using alcohol and certain drugs like sedatives).
- Workers should be made aware of the signs of cold disorders and be trained in appropriate first aid techniques. Victims of hypothermia can be revived.

- At the beginning of each winter season, hold a safety briefing/meeting to review cold hazards and procedures to be followed to prevent injury.

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