

# Howard Talks Tech

## Working in cold environments can involve health risks

Cold is a physical hazard in many outdoor workplaces. Cold stress can affect any outdoor worker who is not protected against it. When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, leading to permanent tissue damage and even death. Low temperature with precipitation and wind can be very dangerous for those who traditionally work out of doors such as firefighters, police officers, sanitation workers and road crews.

The body tries to maintain an internal (core) temperature of 98.6°F. This is done by reducing heat loss and increasing heat production. Under cold conditions, blood vessels in skin, arms, and legs constrict, decreasing blood flow to extremities. This minimizes cooling of the blood and keeps critical internal organs warm. At low temperatures, however, reducing blood flow to the extremities can result in lower skin temperature and higher risk of frostbite.

Wind-chill involves the combined effect of air temperature and air movement upon exposed skin. Exposure to cold causes two major health problems: hypothermia and frostbite.

The most critical aspect of hypothermia is the body's failure to maintain its deep core temperature. Lower body temperatures present the following signs and symptoms:

- Persistent shivering-- starts when core temperature reaches 95°F
- Irrational or confused behavior with reduced mental alertness
- Poor coordination and reduction in rational decision-making.

Left untreated, hypothermia may result in death when body temperature drops below 86°.

Frostbite is a common injury caused by exposure to severe cold or by contact with extremely cold objects. Frostbite occurs more readily from touching cold metal than from cold air. That's because heat is rapidly transferred from skin to metal. The body parts most commonly affected by frostbite are face, ears, fingers, and toes. When tissue freezes, blood vessels are damaged. This reduces blood flow and may cause gangrene. The body loses heat 25 times faster from immersion in water than in air.

The **best protection against cold-related health risks** is to be aware and prepared. Workers should be trained to recognize the signs and symptoms of overexposure in themselves and others. Pain in the extremities may be the first warning sign. Ensure that wind-chill factor is understood by workers, especially those working out in the open. Select protective clothing to suit the cold, the job, and the level of physical activity.

- Wear several layers of clothing rather than one thick layer. Air captured between layers acts as an insulator.
- Wear synthetic fabrics next to the skin because they wick away sweat.
- If conditions are wet as well as cold, ensure that the outer clothing is waterproof or water-repellent. Wind-resistant fabrics may also be required under some conditions.
- Encourage the use of hats and hoods to prevent heat loss from the head and to protect ears. Balaclavas or other face covers may also be necessary
- Workers should wear gloves where the air temperature falls below 39°F. To prevent contact frostbite, workers should wear insulated gloves when surfaces within reach (especially metallic surfaces) are colder than 19°F.

If you must be outside, limit your exposure to the cold by limiting your exposure to times when the sun is at its strongest.

