

## WHEN THE WEATHER OUTSIDE IS FRIGHTFUL

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**December 21 marks the winter solstice, the shortest, darkest day of the year for the northern hemisphere. Make sure your employees are safe, visible and warm when working outside in the cold weather.**

How cold is too cold? Realistically, too cold is when the body is unable to warm itself. If that occurs, cold-related stress may result, and it can be just as dangerous to workers as heat stress.

Four factors contribute to cold stress: air temperatures, air movement, dampness of the air and contact with cold water or surfaces. A cold environment forces the body to work harder to maintain its core temperature. Those of us who live in colder climates understand the significance of wind chill, when the air temperature feels much colder due to wind speed. Wind chill is the combination of air temperature and wind speed. For example, when the air temperature is 40 F, and the wind speed is 35 mph, exposed skin receives conditions equivalent to the air temperature being 11 F.

### HOW THE BODY REACTS

In a cold environment, most of the body's energy is used to keep the internal temperature warm. Over time, the body will begin to shift blood flow from extremities such as the hands, feet, arms, legs and outer skin to the core of the body, the chest and abdomen. This allows exposed skin and the extremities to cool rapidly and increases the risk of frostbite and hypothermia.

Hypothermia is a potentially serious health condition. It occurs when body heat is lost faster than it can be replaced. When the core body temperature drops to around 95 F, the onset of symptoms begins. The worker may begin to shiver, lose coordination, have slurred speech or fumble with items in the hand. The skin likely will be pale and cold.

As the body temperature continues to fall, these symptoms will worsen and workers may be unable to walk or stand. Once the body temperature falls to around 85 F, severe hypothermia will develop and the worker may become unconscious, and at 78 F, the worker could die.

Anyone working in a cold environment may be at risk for cold stress. However, older people may be at more risk than younger adults, since older people are not able to generate heat as quickly. Certain medications may prevent the body from generating heat normally. These include anti-depressants, sedatives, tranquilizers and other medications.

Treatment depends on the severity of the hypothermia. For cases of mild hypothermia, move

the worker to a warm area and keep him or her active. Remove wet clothing and replace it with dry clothes or blankets and cover the head. To promote metabolism and assist in raising internal core temperature, encourage the worker to drink a warm (not hot), sugary drink, avoiding drinks with caffeine.

For more severe cases do all the above, plus contact emergency medical personnel, cover all extremities completely, place very warm objects — such as hot packs or water bottles — on the victim's head, neck, chest and groin. Arms and legs should be warmed last. In cases of severe hypothermia, treat the worker very gently and do not apply external heat to re-warm. Hospital treatment is required.

While not as dangerous as hypothermia, frostbite can be a painful condition. While frostbite usually occurs when the temperatures are 30 F or lower, wind chill factors can allow frostbite to occur in above freezing temperatures. Frostbite typically affects the extremities, particularly the feet and hands. The affected body part will be cold, tingling, stinging or aching followed by numbness. Skin color turns red, then purple, then white. There may be blisters in severe cases.

To treat, do not rub the area to warm it. Wrap the area in a soft cloth, move the worker to a warm area and contact medical personnel.

## **PREVENTION**

As with any type of accident and injury prevention, planning is the answer to avoiding cold-related stress. Supervisors and employees must plan for work in cold weather. Wearing appropriate clothing and being aware of how the body is reacting to the cold are important to preventing cold stress. Avoiding alcohol, certain medications and smoking also can help minimize the risk.

Encourage employees to drink plenty of liquids, avoiding caffeine and alcohol. If possible, heavy work should be scheduled during the warmer parts of the day. Schedule breaks for employees out of the cold and schedule them in pairs to keep an eye on each other and watch for signs of cold stress. Remind them to avoid fatigue, since energy is needed to keep muscles warm, and encourage the consumption of warm, high calorie meals, such as pasta, to maintain energy reserves.

By incorporating these measures into health and safety plans and training employees and supervisors to look for the signs of cold-related stress, your employees will be safer and more productive when working outside during winter months.

## **WHAT TO WEAR IN COLD WEATHER CONDITIONS**

Wear at least three layers: an inner layer of wool, silk or synthetic to wick moisture away from the body; a middle layer of wool or synthetic to provide insulation; and an outer wind and rain protection layer that allows some ventilation to prevent overheating.

Wear a hat or hood. Up to 40 percent of body heat can be lost when the head is left exposed.

Wear insulated footwear.

Keep a change of dry clothing available.

With the exception of the wicking layer, do not wear tight clothing. Loose clothing allows

better ventilation of heat away from the body.

Do not underestimate the wetting effects of perspiration. Oftentimes, wicking and venting of the body's sweat and heat are more important than protecting from rain or snow.

Winter days often are shorter and darker. Wear high visibility caps, coats and vests.

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