Wind Chill Index Meeting Kit

WIND CHILL INDEX

The presence of wind in an already cold environment can pose a deadly combination. It is important to realize the effect wind has when paired with cold temperatures. For example if it is 10 degrees Fahrenheit outside and there is also 20 MPH winds present the temperature actually feels like -9 degrees Fahrenheit to the body. The National Weather Service will often issue wind chill advisories and warnings when a deadly combination of wind and cold air threaten an area.

WORKING SAFE IN COLD WEATHER

When working in cold temperatures, the best defense is common sense. Knowing what to wear, what to eat and drink and what to do if an employee is suffering from a cold-related illness can save lives.

A number of industries and occupations involve substantial outdoor cold exposure. These include construction workers, postal workers, delivery people, utility and telecommunication workers, firefighters, police and others.

WIND CHILL TEMPERATURE

At any temperature, you feel colder as the wind speed increases. The combined effect of cold air and wind speed is expressed simply as the “wind chill” temperature in degrees Celsius or Fahrenheit. It is essentially the air temperature that would feel the same on exposed human flesh as the given combination of air temperature and wind speed. It can be used as a general guideline for deciding clothing requirements and the possible health effects of cold.

EXPOSURE LIMITS FOR WORKING IN COLD ENVIRONMENTS

Where there are no maximum/minimum exposure limits for cold working environments, there are guidelines that can be used to conduct work/task assessments, create safe work plans, and monitor conditions to protect the health and safety of workers who may be exposed to cold temperatures.

Work-warming regimen should be implemented when work is done continuously in the cold when the wind chill temperature is -7°C (19.4°F), heated warming shelters (tents, cabins, rest rooms, etc) should be made available nearby. Workers should use these shelters, depending on the severity of the exposure.

PREVENTION

Here are tips to prevent cold-related illness for workers:

- **Eat properly** with plenty of carbohydrates and fats for energy and warmth prior to beginning work.
- **Drink fluids.** If a person doesn't get up in the night at least once to urinate then they are not drinking enough. Urine should be a pale yellow, straw-like color, not dark.
- **Get enough sleep.** Outdoor work is hard and cannot be done on only a few hours of sleep. Being well rested will make employees feel energized and positive.
- **Remove any wet clothes immediately.** They cause accelerated heat loss and impair movement.
- **Insulate well,** particularly the head and neck as these are the areas that lose the most heat the quickest.
- **Wear proper winter clothing that insulates** from the cold and lets perspiration evaporate while protecting from the wind, rain and snow. Protect feet and toes. Wear two layers of socks – cotton underneath a pair of wool socks is best – with a pair of well-fitted boots that come above the ankle.
- **Hand protection is vital.** Mittens are warmer than gloves, but can limit dexterity. Wear a pair of gloves under a pair of mittens for warmth, and remove mittens to use gloved fingers as needed.

PREVENT THE ADVERSE EFFECTS OF COLD ON WORKERS

For continuous work in temperatures below the freezing point, heated warming shelters such as tents, cabins or rest rooms should be available. The work should be paced to avoid excessive sweating. If such work is necessary, proper rest periods in a warm area should be allowed and employees should change into dry clothes.

Work/rest schedule warm-up breaks are required for working in cold conditions and the normal breaks to be provided every two hours.

HEALTH EFFECTS OF COLD

Cold temperatures have hazardous effects on humans and their ability to work well. When the body is exposed to cold temperatures, the negative effects can include dehydration, numbness, shivering, frostbite, immersion foot and hypothermia.

FROSTBITE

Mild frostbite (frostnip) affects the outer skin layer and appears as a blanching or whitening of the skin. These symptoms usually disappear as the affected area warms. The skin may appear red for several hours.

Superficial frostbite can result in blistering. The skin feels numb, waxy and frozen, and can look grayish-yellow, grayish-blue or white. Ice crystals form in the skin cells and the rest of the skin remains flexible.

Deep frostbite is the most serious of frostbite cases. Sensation usually is absent in the affected area and blistering usually does not occur. The blood vessels, muscles, tendons, nerves and bone may be frozen. This can lead to permanent damage, blood clots and gangrene, which ultimately can lead to amputation and even death if professional medical attention is not obtained as soon as possible.

HYPOTHERMIA

Hypothermia is a dangerously low body temperature. It occurs when more heat is lost than the body can generate. It usually is caused by extended exposure to the cold. Hypothermia can kill amazingly fast when cold temperatures and strong winds cause the

body to quickly lose heat. Symptoms of hypothermia start with shivering, which is the body’s attempt to heat from rapid muscular shaking. When the body’s temperature drops to below 95 F/35 C, shivering stops and dizziness and disorientation begin.

At this point, the body only maintains heat around its vital organs – brain, heart and lungs – and shuts down circulation to the arms and legs. The heart rate becomes slow, intermittent and weak, and the blood vessels widen. This makes a person feel hot and want to remove all of his clothes before he finally slips into unconsciousness. Ultimately, the heart stops.

The risk of hypothermia is significantly higher when temperatures are below freezing, although anything that is below body temperature (98.6 F/37 C) can explain hypothermia, especially in older employees.

FINAL WORD

Cold weather brings additional hazards for workers who are exposed to colder temperatures. Winds can create a dangerous situation in cold weather climates. Follow best practices when working in cold weather environments to lessen the chance of becoming a victim to frostbite, trench foot, or hypothermia.