Cold Stress Meeting Kit

Working under cold conditions can lead to various injuries or health effects, which are collectively known as cold stress. This can lead to death or serious physical harm in the workplace.

DANGERS OF COLD STRESS

Along with air temperature, wind and moisture can create issues for employees working in the cold. Water, including sweat, can displace body heat 25 times faster than dry air, according to the Canadian Center for Occupational Health and Safety. Likewise, wind can blow away the body's protective external layer of heat. This is why wind chill is an important factor to understand. So, for example, when the temperature is 25° F and the wind is blowing 25 mph, the wind chill is 9° F, resulting in more dangerous conditions.

There are three thresholds of cold stress hazards:

- Little danger: Freezing of exposed skin within one hour
- Danger: Freezing of exposed skin within one minute
- Extreme danger: Freezing of exposed skin within 30 seconds

HEALTH EFFECTS OF COLD STRESS

Hypothermia: When exposed to cold temperatures, your body begins to lose heat faster than it can be produced. Prolonged exposure to cold will eventually use up your body's stored energy. The result is hypothermia, or abnormally low body temperature. A body temperature that is too low affects the brain, making the victim unable to think clearly or move well. This makes hypothermia particularly dangerous because a person may not know it is happening and will not be able to do anything about it.

Symptoms of hypothermia vary depending on how long one has been exposed to the cold temperatures.

Early Symptoms

- Shivering
- Fatigue
- Loss of coordination
- Confusion and disorientation

Late Symptoms

- No shivering
- Blue skin
- Dilated pupils
- Slowed pulse and breathing
- Loss of consciousness

Frostbite: Frostbite is an injury to the body that is caused by freezing. Frostbite causes a loss of feeling and color in the affected areas. It most often affects the nose, ears, cheeks, chin, fingers, or toes. Frostbite can permanently damage body tissues, and severe cases can lead to amputation. In extremely cold temperatures, the risk of frostbite is increased in workers with reduced blood circulation and among workers who are not dressed properly.

Symptoms of frostbite include: Reduced blood flow to hands and feet (fingers or toes can freeze), Numbness, Tingling or stinging, Aching, Bluish or pail, waxy skin.

Trench Foot: Trench foot, also known as **immersion foot**, is an injury of the feet resulting from prolonged exposure to wet and cold conditions. Trench foot can occur at temperatures as high as 60 degrees F if the feet are constantly wet. Injury occurs because wet feet lose heat 25-times faster than dry feet. Therefore, to prevent heat loss, the body constricts blood vessels to shut down circulation in the feet. Skin tissue begins to die because of lack of oxygen and nutrients and due to the buildup of toxic products.

Symptoms of trench foot include: Reddening of the skin, Numbness, Leg cramps, Swelling, Tingling pain, Blisters or ulcers, bleeding under the skin, Gangrene (the foot may turn dark purple, blue, or gray).

WORKER PROTECTION MEASURES

If workers cannot avoid the cold stress environment, then follow these recommendations.

- Wear appropriate clothing.
- Wear several layers of loose clothing. Layering provides better insulation.
- Tight clothing reduces blood circulation. Warm blood needs to be circulated to the extremities.
- When choosing clothing, be aware that some clothing may restrict movement resulting in a hazardous situation.
- Make sure to protect the ears, face, hands and feet in extremely cold weather. Boots should be waterproof and insulated.
- Wear a hat; it will keep your whole body warmer. (Hats reduce the amount of body heat that escapes from your head.)
- Move into warm locations during work breaks; limit the amount of time outside on extremely cold days.
- Carry cold weather gear, such as extra socks, gloves, hats, jacket, blankets, a change of clothes and a thermos of hot liquid.
- Include a thermometer and chemical hot packs in your first aid kit.
- Avoid touching cold metal surfaces with bare skin.
- Monitor your physical condition and that of your coworkers.

CREATE A COLD STRESS EXPOSURE POLICY – The Best way to combat cold stress

Explain. Help workers understand the dangers they are trying to prevent, such as frostbite and hypothermia, by explaining them in the policy.

Require Periodic Monitoring of Temperature, Wind Chill, and Other Factors. The obligation to protect workers against cold stress involves monitoring temperature and wind chill levels.

Require Supervisors to Protect Workers Subject to Cold Exposure.

Your supervisors should also monitor workers performing light, moderate or heavy work. While moderate work provides a warming effect, heavy work produces perspiration which makes workers more vulnerable to cold stress injuries. Another important factor is whether working conditions are wet – which would require additional protection – or dry.

Make Workers Work in Groups. Cold stress problems can creep up on a worker before they realize what's going on. Protect workers by having them work together, putting each worker in charge of another's safety.

Provide for Worker Training. The plan should require somebody at your facility to train all workers and supervisors about the signs, symptoms and prevention of cold stress.

FINAL WORD

Cold stress occurs by driving down the skin temperature and eventually the internal body temperature (core temperature). This may lead to serious health problems, and may cause tissue damage, and possibly death.