How to Provide Cold Stress Safety Training: Glenn Commandments

Working in cold and wintry conditions isn't just uncomfortable but potentially fatal. That's why OHS laws require employers to take specific safety measures to protect workers who are exposed to cold stress hazards, either because they work outdoors in the winter or inside freezers and other frigid spaces at any time of the year. Worker education and training are crucial elements of cold stress hazard prevention. Here's a game plan for providing effective and legally compliant cold stress safety training to your own workers.

Learning Objectives for Cold Stress Training

By the time they complete their training, workers exposed to hazardous cold conditions need to understand (and be able to demonstrate their understanding of):

- What cold stress is.
- Why it's dangerous.
- How to protect themselves from the cold stress dangers to which they're exposed.
- How to recognize the signs and symptoms of each form of cold stress.
- How to respond if they or a coworker exhibits such signs or symptoms.

Get Workers' Attention

Start out by letting workers know what's at stake. Explain that being in the cold too long can lead to a condition called cold stress, which can cause serious injury and even death. Make it real. Tell workers that about 129 people in Canada die of cold stress each year, which is more than the number of people who die in floods and tornadoes. Explain who's at the most risk, including:

- Older workers—about 50% of all cold stress victims are 65 or older.
- Outdoor workers, including agriculture, construction, oil and gas extraction, and utilities.
- Workers who work in cold indoor environments, including refrigerated facilities in warehouse food plants and warehouses.
- Workers who work near or above water, like fishers.
- Divers and others who work in water.

Explain What Makes Cold Stress Dangerous

Explain that human beings are warm-blooded. That means their bodies must maintain a fairly constant internal temperature to function properly. If body temperature falls too low, the blood vessels constrict, or tighten up, and it becomes harder to circulate blood throughout the body. After a while, the body shifts blood flow away from the extremities (limbs, fingers, toes, nose, etc.) and to the core (chest and abdomen). Tell workers that these effects can result in a series of dangerous and potentially fatal conditions known as cold stress.

Describe the 4 Kinds of Cold Stress

Explain that there are 4 forms of cold stress and describe each one.

The 4 Forms of Cold Stress

Condition	Description	Potential Results
Frostbite	Freezing of the extremities due to loss of blood flow.	Tissue damage, amputation.
Trench foot (aka immersion foot)	Injury to the feet caused by prolonged exposure of the feet to wet and cold which causes blood flow to shut down	Tissue damage, amputation.
Chilblains	Exposure to cold damages blood vessels and causes ulcers or blistering of the skin.	Tissue damage.
Hypothermia	Body temperature drops so low that the body loses heat faster than it can replace it. Result: The body uses up all its stored energy and can no longer produce heat.	Shutdown of bodily functions and systems which can cause death.

Emphasize that hypothermia is the most dangerous form of cold stress.

Explain How Cold Stress Happens

Tell workers that normal body temperature is 36°C/98.6°F and that the body can withstand minor and short-term fluctuations up and down. Explain that cold stress becomes a threat when core body temperature drops below 35°C/95.0°F. Let workers know that this can happen as a result of being exposed to cold air or surfaces.

Explain the Factors that Affect Risks of Cold Stress

Tell workers that the risks of cold stress are based on how cold the conditions are and how long they’re exposed to those conditions. Make sure that workers understand that to determine how cold conditions are, you must take into account not just actual temperature but other factors that affect how cold it actually feels on the skin.

Go over each of the risk factors for cold stress, including:

- Air temperature.
- Wind speed—air feels colder when it’s blowing around.
- Humidity.
- Clothing worn.
- Physical activity performed during exposure.

- Contact with cold or wet floors or surfaces.

Explain that people can withstand the cold better than others and, accordingly, that the risk of cold stress is also a function of a worker's age, gender, condition, and other physical characteristics affecting their tolerance level.

Explain Your Cold Stress Prevention Strategy

Explain that the key to preventing cold stress is to implement measures to ensure that workers aren't exposed to conditions that cause their core body temperature to drop below the critical 35°C/95.0°F threshold. Then, describe those measures.

Explain Your Cold Stress Engineering Controls

Tell workers what engineering controls you use to control thermal conditions in the workplace in terms of not just temperature but how cold it actually feels. Such controls may include use of radiant heaters, barriers to block wind, and/or establishment of "warm-up" centers.

Explain Your Cold Stress Work/Administrative Controls

Next, explain that the second prong of the prevention strategy is to ensure that work involving exposure to cold stress is carried out as safely as possible.
Then describe the actual work/administrative measures that you implement, such as scheduling cold work for the warmest parts of the day, continually monitoring weather conditions while work is conducted and/or letting workers take frequent "warm-up" breaks.

Explain What Protective Clothing Is Required to Prevent Cold Stress

Next, let workers know what they can do to protect themselves from cold stress risks. Start by explaining that warm and dry clothing is crucial to preventing cold stress and list the items workers should wear when performing work in cold conditions, which may include:

- At least 3 layers of loose-fitting clothing, including:
- An inner layer of wool, silk, or synthetic materials to insulate the body against moisture.
- A middle layer of wool or synthetics for insulation in case the outer layer gets wet.
- An outer layer to protect against wind and moisture and that's ventilated to prevent overheating.
- A hat or hood to keep heat from escaping from the worker's head.
- A knit mask to cover the worker's face and mouth.
- Gloves that are insulated and, if necessary, waterproof.
- Insulated and waterproof boots or other footwear.

Explain the Role of First Aid in Cold Stress Protection

Tell workers that when doing work involving cold stress hazards, they need to be aware of the dangers and look out for each other. Explain that to do this effectively, each worker needs to:

- Be able to recognize the signs and symptoms of each form of cold stress.

- Know what to do in response to such signs and symptoms.

Describe the Signs and Treatments of Different Forms of Cold Stress

Last but not least, describe the signs, symptoms, and appropriate first aid treatment of each form of cold stress.

Cold Stress Symptoms & First Aid

Cold Stress Condition	Signs & Symptoms	First Aid Treatment
Frostbite	• Bluish or pale, waxy skin. • Numbness. • Tingling. • Stinging. • Blisters.	• Get into a warm room ASAP. • Do NOT rub affected areas. • Do NOT use a heating pad or heat lamp to warm (which may cause burns). • Do NOT break blisters. • Loosely cover and protect affected areas from contact. • Give victim warm, sweetened drinks.
Trench foot	• Reddening of skin. • Numbness. • Leg cramps. • Tingling pain. • Swelling. • Blisters. • Bleeding under skin. • Foot turns dark purple, blue, or gray.	• Remove shoes, boots, wet socks. • Dry feet. • Do NOT let victim walk as this may cause tissue damage to the feet.
Chilblains	• Redness. • Itching. • Blistering. • Inflammation. • Ulceration.	• Do NOT scratch the itch. • Slowly warm skin. • Use corticosteroid creams to relieve itching and swelling. • Keep blisters/ulcers clean and covered.
Hypothermia	Early Symptoms • Shivering. • Fatigue. • Loss of coordination. • Confusion/Disorientation. Late Symptoms • No shivering. • Blue skin. • Dilated pupils. • Slowed pulse & breathing. • Loss of consciousness.	• Request immediate medical help. • Move victim to warm area or room. • Remove wet clothing. • Warm center of body—chest, neck, head, groin. • Have victim drink warm beverages without alcohol. • When body temperature increases, keep victim dry and wrapped in a warm blanket—including the head and neck. • Begin CPR if victim has no pulse.