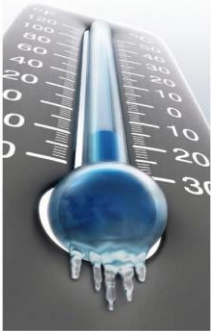


The *BSO Plus Safety Topic* is a review designed from the BSO Plus agenda. This safety topic is your way to stay current on the safety information over the 3 years, so please ensure you submit the completed test to your employer for record retention.

COLD STRESS

What is cold stress?



People who work in cold environments or who are exposed to extreme cold may be at risk of cold stress, which can lead to freezing injuries and hypothermia.

When exposed to the cold, your body expends much of its energy in keeping your internal temperature warm. The toes, fingers, ears, and nose are at the greatest risk for exposure because they do not have a major muscle group for heat production.

With prolonged exposure, your body will react by shifting blood flow from your extremities (hands, feet, arms, and legs) and outer skin to your core (chest and abdomen) as a means of protecting your internal organs.

What are the health effects of exposure to cold?

Frostbite

Frostbite is an injury that occurs when body tissue temperature falls below the freezing mark, either from lack of blood flow or from exposure to cold temperatures or contact with extremely cold objects (especially metal). The body tissues may be severely, even permanently, damaged from frostbite injuries. Skin that has suffered from frostbite is usually very susceptible to the cold after recovering from the first injury. In severe cases, when blood flow can't be restored to damaged tissue, the result may be amputation of the affected area.



Hypothermia

Hypothermia occurs when the body loses heat faster than it can be generated. Prolonged exposure to cold will eventually use up the body's stored energy. When the core body temperature starts to drop, the brain's ability to function properly is affected. A person suffering from hypothermia may not even realize what is happening and will not be able to do anything to protect himself or herself.

Early symptoms

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

Late symptoms

- No shivering
- Blue / puffy skin
- Dilated pupils
- Slowed pulse
- Loss of consciousness

What is wind-chill temperature?



A cold environment challenges the worker in three ways:

1. Air Temperature
2. Air Movement (wind speed)
3. Humidity (wetness)

In order to work safely, all three factors must be assessed when planning for work in cold environments. Planning for work in cold environments is your most important defence.

At any temperature, you feel colder as the wind speed increases. “Wind Chill” is a still-air temperature that would have the same cooling effect on exposed human skin as a given combination of temperature and wind speed. It can be used as a general guideline for deciding clothing requirements and the possible health effects of cold.

		WIND CHILL CHART								
		Ambient Temperature (°C)								
		4	-1	-7	-12	-18	-23	-29	-34	-40
Wind km/h	Velocity mph	Equivalent Chill Temperature (°C)								
Calm										
0	0	4	-1	-7	-12	-18	-23	-29	-34	-40
8	5	3	-3	-9	-14	-21	-26	-32	-38	-44
16	10	-2	-9	-16	-23	-30	-35	-43	-50	-57
24	15	-6	-13	-20	-28	-36	-43	-50	-58	-65
32	20	-8	-16	-23	-32	-39	-47	-55	-63	-71
40	25	-9	-18	-26	-34	-42	-51	-59	-67	-76
48	30	-16	-19	-22	-36	-44	-53	-62	-70	-78
56	35	-11	-20	-29	-38	-47	-55	-65	-73	-82
64	40	-12	-21	-29	-38	-47	-56	-65	-73	-82

Adapted from: Threshold Limit Values (TLV) and Biological Exposure Indices (BEI) booklet; published by ACGIH, Cincinnati, Ohio (source: www.ccohs.ca)

Little danger in less than one hour exposure of dry skin

DANGER – Exposed flesh freezes within one minute

GREAT DANGER – Flesh may freeze within 30 seconds

Maximum danger of false sense of security

How can you protect yourself from cold stress?

To protect yourself from cold stress, you should:

- Wear layered clothing, which helps trap heat close to the skin and allows you to add or remove layers to respond to shifts in temperature
- Prevent up to 50% of body heat loss by wearing a wool knit cap or liner under a hardhat
- Stay hydrated with regular intake of non-caffeinated fluids (hot soup or non-caffeinated beverages are recommended)
- Avoid alcohol, which increases blood flow to the outer layer of skin and leads to faster loss of body heat
- Follow your employer’s safe work procedures for cold environments
- If you are taking medications, consult your doctor before working in the cold. Certain medications may prevent the body from generating heat normally. These include sedatives, anti-depressants, tranquilizers and some heart medications. (source: www.ccohs.ca)