Cold Conditions Guidelines for Outside Workers

Working in Cold Environments

Hypothermia, a lowering of the core body temperature to <95° F (<35° C) causes approximately 600 deaths each year in the United States according to the National Center for Health Statistics. Working in cold environments requires people to be aware of the risk of hypothermia and frostbite and understand how to protect the body from excessive exposure to cold conditions. The ambient temperature and duration of exposure to cold are keys to determining the level of risk from exposure. These guidelines should be used by UNH employees to reduce the risk of accidents and frostbite during outdoor work in cold weather.

How Cold is Too Cold?

Four factors contribute to cold stress: cold temperatures, high or cold wind, dampness and cold water. A cold environment forces the body to work harder to maintain its temperature. Cold air, water, and snow all draw heat from the body. Wind chill is the combination of air temperature and wind speed.

Wind Chill

The wind chill temperature is how cold people and animals feel when outside. Wind chill is based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature. Therefore, the wind makes it FEEL much colder. For example, when the air temperature is 5°F, and the wind speed is 35 mph, your exposed skin receives conditions equivalent to the air temperature being -21°F, also known as wind chill temperature. At this wind chill temperature, exposed skin can freeze in 30 minutes.
In 2001, the National Weather Service (NWS) implemented the updated Wind Chill Temperature (WCT) index shown below.

**Wind Chill Chart**

![Wind Chill Chart](chart.png)

Preventing Cold Stress

- Planning for work in cold weather is the key. Wearing appropriate clothing and being aware of how your body is reacting to the cold are important to preventing cold stress. Workers can face increased risks when they take certain medications, are in poor physical condition or suffer from illnesses such as diabetes, hypertension or cardiovascular disease.

Protective Clothing

Wearing the right clothing is the most important way to avoid cold stress. The type of fabric also makes a difference. Cotton loses its insulation value when it becomes wet. Wool, on the other hand, retains its insulation even when wet. The following are recommendations for working in cold environments.

- Wear at least three layers of clothing: 1) An outer layer to break the wind and allow some ventilation (like Gortex® or nylon), 2) A middle layer of down or wool to absorb
sweat and provide insulation even when wet, and 3) An inner layer of cotton or synthetic weave to allow ventilation.

• Special attention should be given to protecting your feet, hands, head, and face. Your head should be covered (up to 40% of your body heat can be lost when your head is exposed). Fingers and hands lose their dexterity at temperatures below 59°F. Find gloves that will allow you to perform the tasks you need to perform and remember to put dry gloves on if your gloves get wet.
• Wear insulated boots or other footwear.
• Keep a change of dry clothing available in case work clothes become wet.
• Do not wear tight clothing. Loose clothing allows better ventilation.

Work Practices

• Drink plenty of liquids, avoiding caffeine and alcohol. It is easy to become dehydrated in cold weather.
• If possible, heavy work should be scheduled during the warmer parts of the day.
• Take short breaks in warm dry shelters out of the wind and cold.
• Try to work in pairs to keep an eye on each other and watch for signs of cold stress.

Engineering Controls

Some engineering controls that may be available to reduce the risk of cold stress.

• Radiant heaters may be used to warm workers.
• Shield work areas from drafts or wind.
• Use insulating material on equipment handles when temperatures drop below 30°F.

Supervisors and Managers

Supervisors and managers should watch for signs of cold stress and ensure that work schedules allow appropriate rest periods. Appropriate engineering controls, personal protective equipment and work practices should be used to reduce the risk of cold stress.

Workers should be trained to:

• Recognize the environmental and workplace conditions that may be dangerous.
• Learn the signs and symptoms of cold-induced illnesses and injuries.

For more information on cold weather work, please contact the Office of Environmental Health and Safety at 862-4041.