



Cold stress

Severe cold stress can lead to hypothermia, which can be fatal. Cold stress can affect people working in cold or wet environments. Workers may show symptoms ranging from shivering to loss of consciousness. Reducing the risks is an important step in keeping workers safe.

- **How workers are exposed**
- **The risks**
- **How to reduce the risks**
- **Resources**

How workers are exposed

Five main factors cause cold stress. Workers can be affected by:

- Naturally or artificially cooled environments
- Wind, which pulls heat away from the body in any environment
- Wet clothing, from sweat or water
- Cold water immersion, which cools the body 25 times faster than cold air
- Fatigue, which makes it harder for the body to create heat

The risks

Cold stress can lead to hypothermia. This is a gradual process. Because it happens slowly, workers may not realize they are in danger until it's too late. Feeling cold is the most important warning sign to note. If workers feel cold, their bodies are likely losing heat faster than their bodies are making it.

There are three stages of hypothermia. Here are the key warning signs for each stage:

Mild

- Shivering
- Grogginess
- Poor judgment or confused thinking

Moderate

- Violent shivering
- Inability to think or pay attention
- Slow, shallow breathing

- Slurred speech
- Poor body coordination

Severe

- Loss of consciousness
- Little or no breathing
- Weak, irregular, or non-existent pulse

How to reduce the risks

To reduce the potential for injury or disease, you need to [control the risks](#) and hazards in your workplace.

The most effective way to manage the risk of cold stress is to eliminate the source of exposure. If that's not possible, there are other risk controls to use. When choosing risk controls, start by asking yourself the questions in the following steps, listed in order of effectiveness. See our resources for more information.

1

Elimination or substitution

Eliminating the hazard by substituting a safer process or material, where possible, is the most effective control. Some questions to consider:

- Can the work be done in a different environment?
- Can a process that generates less cold or water be used?

2

Engineering controls

Making physical modifications to facilities, equipment and processes can reduce exposure. Some questions to consider:

- Can heated warming shelters be placed on site?
- Can machines and tools be designed so that they can be operated without having to remove mittens or gloves?

3

Administrative controls

These involve changing work practices and work policies. Providing awareness tools and training also count as administrative controls. All can limit the risk of cold stress. Some questions to consider:

- Has an exposure control plan been developed?
- Can warning signs be posted in the work area?
- Can work rotation be used to decrease cold exposure?
- Can signs explaining exposure symptoms be posted?
- Can written safe work procedures be posted?
- Can work be paced differently so that workers don't have to exert themselves to the point of heavy sweating?
- Have workers received training and education to increase awareness of signs and symptoms of cold stress?

4

Personal protective equipment

This is the least effective control. When used, there must always be at least one other control in place as well. Some questions to consider:

- Can personal battery-operated heaters or chemical heating pads under clothing be used?
- Do workers have the proper protective clothing? (They need a warm head covering and layered clothing. They also need to keep hands and feet warm and dry.)
- Has personal protective equipment been tested to make sure it is working properly?