

# COLD STRESS

## IDENTIFY

When you are cold, blood vessels in your skin, arms, and legs constrict, decreasing the blood flow to your extremities. This helps your critical organs stay warm, but you risk frostbite in your extremities.

### Wind chill

The wind accelerates heat loss. For example, when the air temperature is -30°C and there are 16 km/hr winds (a flag will be fully extended) your skin can freeze in about a minute. When the air temperature is -30°C and there are 48 km/hr winds, your skin can freeze in 30 seconds.

### Frostbite

This means that your flesh freezes. Blood vessels are damaged, and the reduced blood flow can lead to gangrene. Frostbitten skin looks waxy and feels numb. Once tissue becomes hard, it's a medical emergency.

### Hypothermia

This means your core temperature drops. Moderate symptoms include the following:

- Shivering
- Blue lips and fingers
- Slow breathing and heart rate
- Disorientation and confusion
- Poor coordination

Severe symptoms of hypothermia include the following:

- Unconsciousness
- Heart slowing down to the point where there is no shivering and/or pulse is irregular
- No detectable breathing
- Casualty resembling death — assume casualty is alive

## COMMUNICATE AND CONTROL

Here is how to control frostbite:

- Get medical aid.
- Warm area with body heat — do not rub.
- Don't thaw hands and feet unless medical aid is distant and there's no chance of refreezing. Body parts are better thawed at a hospital.

Here is how to control hypothermia:

- Hypothermia can kill — get medical aid immediately.
- Carefully move casualty to shelter. (Sudden movement can upset heart rhythm.)
- Keep casualty awake.
- Remove wet clothing and wrap casualty in warm covers.
- Apply direct body heat — rewarm neck, chest, abdomen, and groin, but not extremities.
- If conscious, give casualty warm, sweet drinks.

Here is how to control cold stress:

- Wear several layers of clothing rather than one thick layer to capture air as an insulator.
- Wear synthetic fabrics next to the skin to wick away sweat.
- Wear a waterproof or wind resistant outer layer if conditions require.
- Wear warm gloves.
- Wear approved liners that will strap into the headliner of the hard hat. Do not wear a toque or hoodie under your hard hat.
- Avoid tight-fitting footwear, as this restricts blood flow. You should be able to wear either one thick or two thin pairs of socks.
- If your clothing gets wet at 2°C or less, change into dry clothes immediately and get checked for hypothermia.
- If you get hot while working, open your jacket but keep your hard hat and gloves on.
- Consume warm, high-calorie drinks and food.

### For supervisors

Wind chill speeds up heat loss. Show the crew where they can get some relief from the cold (e.g. a heated shelter) and some hot food and warm drinks.

# THE QUIZ

- List two symptoms of frost bite:
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  - \_\_\_\_\_
- List the items of frost bite treatment:
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  - \_\_\_\_\_
- List two moderate symptoms of hypothermia:
  - \_\_\_\_\_
  - \_\_\_\_\_
- List two severe symptoms of hypothermia:
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  - \_\_\_\_\_
- List two items of hypothermia treatment:
  - \_\_\_\_\_
  - \_\_\_\_\_
- List three ways to control cold stress:
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  - \_\_\_\_\_
  - \_\_\_\_\_
- List two signs that your body is cold:
  - \_\_\_\_\_
  - \_\_\_\_\_
- How quickly can skin freeze in 48 km/hr winds when the air temperature is -30°C?  
\_\_\_\_\_

**ANSWERS:**  
1. Waxy skin, damaged blood vessels; 2. Warm the body, get medical aid; 3. Shivering, blue lips/fingertps;  
4. Unconscious, slowed breathing; 5. Medical aid, keep them awake; 6. Layers, wear gloves, wear an approved liner in your hard hat that is secured to the headliner straps; 7. Shivering, slowed breathing; 8. 30 seconds