Workplace Injury Prevention

Working in Cold Conditions

The Occupational Health and Safety Regulations, 2020 require employers and contractors to take measures to protect the health and safety of the employees who must work outdoors in the cold weather.

For an employee who routinely works outdoors in cold conditions, this could include providing suitable clothing, regularly monitoring thermal conditions, providing emergency supplies for employees who are travelling, ensuring proper rest and warm-up breaks are provided, and providing necessary screens, shelters or temporary heating equipment. If an employee is required to work in cold conditions when that is not part of their regular duties, they must be provided with suitable clothing or other personal protective equipment to protect their health and safety.

Special attention should be given to good hand and footwear, as well as face and head protection.

How fast a person's body cools in cold weather depends on:

- air temperature,
- wind speed,
- heat of the sun,
- work being done, and
- whether or not they are able to stay dry.

The fingers and toes usually feel cold first. Shivering then sets in. Shivering is the body's way of warning that it needs to be warmed up. If not warmed, a person may become distracted by the discomfort, and become more likely to have an incident. The risk of frostbite also increases. Employers and contractors should provide a heated warm-up shelter(s) at the workplace where workers can get indoors and out of the cold weather.

The Work Warm-Up Schedule

The Work Warm-Up Schedule shows the warm-up breaks required for working in cold conditions and the normal breaks to be provided every two hours. The schedule allows additional breaks for workers as the wind velocity at the work site increases and/or the temperature drops.

Warm-up breaks should begin when the temperature reaches -26 C (-15 F), with winds of 16 km/h (10 mph) or greater. All non-emergency work should stop by the time the temperature reaches -43 C (-45 F), if there is no noticeable wind. If there is wind, use the chart below for advice.

Note: *The information in the chart applies to moderate to heavy physical work activity in any four-hour period. At the end of the four-hour period, an extended break in a warm location is expected.*

Warm-up breaks are assumed to be provided for ten minutes in a warm environment. This guideline applies to workers wearing dry clothing.

<table>
<tr><th colspan="2">Sunny sky air temperature</th><th colspan="2">No noticeable wind</th><th colspan="2">Wind 8 km/h (5 mph)</th><th colspan="2">Wind 16 km/h (10 mph)</th><th colspan="2">Wind 24 km/h (15 mph)</th><th colspan="2">Wind 32 km/h (20 mph)</th></tr>
<tr><td>˚C below zero*</td><td>˚F below zero*</td><td>Max. work period</td><td>Number of breaks**</td><td>Max. work period</td><td>Number of breaks**</td><td>Max. work period</td><td>Number of breaks**</td><td>Max. work period</td><td>Number of breaks**</td><td>Max. work period</td><td>Number of breaks**</td></tr>
<tr><td>26 to 28</td><td>15 to 19</td><td>120 minutes</td><td>1</td><td>120 minutes</td><td>1</td><td>75 minutes</td><td>2</td><td>55 minutes</td><td>3</td><td>40 minutes</td><td>4</td></tr>
<tr><td>29 to 31</td><td>20 to 24</td><td>120 minutes</td><td>1</td><td>75 minutes</td><td>2</td><td>55 minutes</td><td>3</td><td>40 minutes</td><td>4</td><td>30 minutes</td><td>5</td></tr>
<tr><td>32 to 34</td><td>25 to 29</td><td>75 minutes</td><td>2</td><td>55 minutes</td><td>3</td><td>40 minutes</td><td>4</td><td>30 minutes</td><td>5</td><td colspan="2" rowspan="4">Non-emergency work should stop</td></tr>
<tr><td>35 to 37</td><td>30 to 34</td><td>55 minutes</td><td>3</td><td>40 minutes</td><td>4</td><td>30 minutes</td><td>5</td><td colspan="2" rowspan="3">Non-emergency work should stop</td></tr>
<tr><td>38 to 39</td><td>35 to 39</td><td>40 minutes</td><td>4</td><td>30 minutes</td><td>5</td><td colspan="2" rowspan="2">Non-emergency work should stop</td></tr>
<tr><td>40 to 42</td><td>40 to 44</td><td>30 minutes</td><td>5</td><td colspan="2" rowspan="2">Non-emergency work should stop</td></tr>
<tr><td>43 and below</td><td>45 and below</td><td colspan="2">Non-emergency work should stop</td></tr>
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*All temperatures are approximate.

**Includes a normal break after two hours and the number of additional warm-up breaks needed.

Note: *This guideline is not intended to replace established cold weather work practices that provide workers with better protection.*

Green Zone - Work as usual

- Apply normal break schedule.
- Dress appropriately for the weather and work duration.

Orange Zone - Work with precautions

- When working in the cold, breaks should be given in a warm area. **Provide 10-minute warm-up breaks for the work time listed in the chart.**
- Minimize prolonged sitting or standing AND increase task rotation.
- Monitor temperature at least every four hours.

- Wear several layers of clothing, rather than one heavy layer, to prevent over heating and sweating. Sweating should be avoided to minimize the body's heat loss, which may require removing clothing layer(s) depending on the activity (remove hat and gloves last).
  - **For the body:**
    - Inner layer: light-weight polyester or polypropylene
    - Insulating layer: fleece or wool
    - Outer layer: rain, snow, and wind repellent with provisions for ventilation
  - **For the feet:**
    - Felt-lined, rubber-bottomed, leather-topped boots with removable insoles and socks
- Dress appropriately for the weather and work duration.
- It may take 10-12 minutes into the work for the body to warm up and sweating to start.
- If workers' clothing gets wet, make sure appropriate dry clothing and a warm change area are available.
- Wind protective clothing, eye protections, and portable heating devices may be required.

Red Zone - Stop non-emergency work

- ONLY emergency work should be performed.

Refer to CCOHS - “Cold Environments-Working in the Cold” for more details.
https://www.ccohs.ca/oshanswers/phys_agents/cold_working.html

Special measures need to be taken in certain circumstances

1. When the work involves riding on an unshielded vehicle or some other activity that generates wind, the number of breaks should be increased appropriately. If effective protection against the wind can be provided by shields or screens, work modification or other measures, then the work warm-up schedule for “no noticeable wind” would apply. When work must be done in isolated areas, a ‘buddy system’ or a reliable two-way communication system should be used. Some vehicles may need to be equipped with survival gear.
2. Apply the schedule one step lower for work with limited physical activity. For example, at -35 C (-30 F), with no noticeable wind, a worker with a job requiring little physical movement should have a maximum work period of 40 minutes with four breaks in a four-hour period.

Estimating wind velocity

If reliable weather reports are not available, use the following as a guide to estimate wind velocity:

- An 8 km/h (5 mph) wind will move a light flag.
- A 16 km/h (10 mph) wind will fully extend the flag.
- A 24 km/hr (15 mph) wind will raise a newspaper sheet.
- A 32 km/h (20 mph) wind will produce blowing and drifting snow.

Environment Canada may report a wind chill index. If wind speeds are higher than those identified in the chart, a wind chill of -51 C should be used to determine the point at which all non-emergency work should stop.

For more information

Occupational Health and Safety

For information about occupational health and safety in the workplace, visit saskatchewan.ca/business/safety-in-the-workplace or call 1.800.567.7233 (SAFE).

Employment Standards

For information on employment standards, visit saskatchewan.ca/business/employment-standards or call 1.800.667.1783.

WorkSafe Saskatchewan

For information about issues in your industry, contact your safety association or visit worksafesask.ca.

Saskatchewan Workers' Compensation Board

For compensation and prevention information for employers, visit www.wcbsask.com and click on 'Employers' or phone toll free at 1.800.667.7590.

Note: *This is not a legal document. Consult the legislation to interpret.*