

Climate Change

Climate Change: Extreme Weather - Heat

On this page

[Are we experiencing warmer weather?](#)

[What are the impacts on worker health and safety?](#)

[How can a workplace plan for extreme heat events?](#)

[What control measures can the employer put in place?](#)

[What can workers do?](#)

[Where can I find more information?](#)

Are we experiencing warmer weather?

Yes. All regions in Canada are experiencing warmer weather, and temperatures will continue to increase. According to Canada's Climate Change report (2019), Canada's annual average land temperature has warmed by a best estimate of 1.7°C since 1948 with higher increases observed in the North, the Prairies, and northern British Columbia.

This increase in temperature may pose significant health risks to workers due to heat-related illnesses. Employers have a general duty to take all precautions reasonable to protect their workers, as well as specific [legislative requirements](#) regarding workplace temperatures (e.g., occupational exposure limits). This document provides guidance on how to protect workers from extreme heat events and how to make work environments safer.

What are the impacts on worker health and safety?

Heat

The effects of warmer weather include more extreme heat events which can cause significant [health issues](#), such as heat exhaustion, heat stroke, and other heat stress related illnesses.

[Higher temperatures](#) for longer periods of time can increase the risk of injuries due to fatigue, lack of concentration, poor decision making, and other factors. A reduction in productivity may also occur.

Air Quality

Hotter temperatures can increase the levels of air pollution and harmful exposures to workers, such as ground-level ozone and fine particulate matter (e.g., smog). Poor air quality can be caused by increased sunlight, warmer temperatures, and the buildup of air contaminants due to stagnant air. The presence of air pollution combined with the sun's ultraviolet rays and heat results in a chemical reaction that produces ground-level ozone which is harmful to breathe. Wildfires and droughts (from wind-blown soil and dust) contribute to poor air quality. There may also be higher levels of allergy causing pollen in the air due to longer pollen seasons, and increased pollen production.

These impacts on air quality are linked to chronic health issues such as respiratory disease, heart disease, and allergies.

Mental Health

Increasing temperatures may cause elevated levels of stress on workers, including workers involved in emergency services. Outdoor workers may experience stress when they need to change their schedules and hours due to the temperature which can impact their work-life balance.

Operational Impacts

Equipment and materials, especially those items used outside, can be impacted by higher temperatures. Hot temperatures can cause equipment components to work harder and possibly wear out faster. This overheating may cause an increase in delays, unexpected disruptions, higher maintenance costs, and an increased risk of injuries for operators and anyone around the equipment.

How can a workplace plan for extreme heat events?

In an extreme heat event, persons who are not yet acclimatized to the heat may find it more difficult to deal with the hot temperatures while performing their job. [Control measures](#) must be implemented to protect workers, and time given to allow workers to acclimatize to the heat. Emergency service providers, including paramedics and firefighters, may also be overwhelmed with having to respond to an excess number of heat-related illness calls. This increase in cases could lead to a delayed response time from emergency services to arrive if a worker requires immediate medical attention (e.g., due to heat stroke), which further emphasizes the importance for workplaces to protect their workers from heat.

Additional circumstances that can increase the risk of suffering a heat-related illness during extreme heat events include workers who:

- work outdoors
- work in a building with no air-conditioning
- perform physically demanding work
- work with or near equipment that generates heat
- do not have access to a cool and sheltered area to rest and take breaks
- do not have access to cool drinking water

Extreme heat can put everyone at risk for heat-related illness, although health risks are greater for:

- people with chronic illnesses, such as breathing difficulties or heart conditions
- people that are pregnant
- young children and older adults

What control measures can the employer put in place?

Prepare for the heat by developing and implementing a heat stress plan which outlines the measures needed to prevent heat stress, as well as addressing extreme heat events. A heat stress plan may also be part of your emergency preparedness and response plans. The most effective strategies to protect workers are to implement [preventive measures and controls](#) to eliminate or minimize a worker's exposure to extreme heat.

The following control measures will help workplaces address heat concerns:

Work Environment Controls

- Where possible, do not do physically demanding work in hot environments (e.g., change location or provide air conditioning).
- Review and improve the ventilation in the building, if needed (e.g., air conditioning, fans, dehumidifiers, etc.).
- Use barriers or insulation to shield workers from equipment that generates heat.
- Provide a cool and shaded area for breaks.
- Ensure workers have access to cool drinking water.

Work Planning and Job Specific Controls

- Identify which tasks and work areas may be a risk to workers during an extreme heat event.
- Review weather forecasts and pay attention to heat advisories when scheduling work that is done outdoors, is physically demanding, or in indoor spaces that are not temperature controlled.
- Reschedule the work, if possible. If this work can't be rescheduled, make sure workers take breaks, have a cool and shaded area to rest, and drink water often. They should be instructed to immediately stop work and report to their supervisor if they experience any signs of heat stress.
- Provide mechanical aids to reduce the level of physical effort that is required for tasks (e.g., dollies, carts, lifting devices, etc.).
- Schedule physically demanding work for a cooler time of day.
- Rotate workers in and out of areas that are hot or tasks that are physically demanding, when possible.
- Organize work in way that reduces the pace to allow more rest time and time to drink water.
- Assign more workers to a task to reduce the level of effort required by each worker.
- When appropriate and possible, wear personal protective equipment that is light and breathable.

Programs and Procedures

- Develop or review a heat stress plan
 - Identify when heat stress controls are needed
 - Indicate how temperature, [humidex](#), ambient air quality, and other factors that can cause heat stress will be monitored
 - Include details on work/rest cycles (e.g., when to shorten work periods and increase rest periods)
 - Include heat stress controls specific to your work environment
- Address extreme heat events in your emergency preparedness and response plans
 - Supervisors should check-in frequently with workers to identify potential heat stress symptoms
 - Have workers present who are trained in first aid and cardiopulmonary resuscitation (CPR). Make sure other workers know who they are and how to contact them.

- Develop [first aid procedures](#) to assist a person experiencing heat stress. Note that heat stroke is a medical emergency and medical help should be called immediately (911 or local emergency services). Provide first aid until medical help arrives.
- Ask the health and safety committee to address extreme heat events and climate change
- Provide access to mental health resources (e.g., EAP) and consult with workers about scheduling, stress, and fatigue to encourage a [psychologically safe work environment](#)

Training

Train supervisors and workers on how to prevent heat stress, and how to recognize the signs and symptoms. All workers should know how to respond if heat stress is suspected, and what to do in an emergency.

Please see the OSH Answers [Hot Environments – Health effects and First Aid](#) for more information.

What can workers do?

- Participate in education and training
 - Understand the signs and symptoms of heat stress and how to recognize in others. Notify your supervisor immediately if you or your coworkers begin experiencing any signs and symptoms
 - Immediately notify your supervisor if you have any health and safety concerns, such as working outdoors in extreme heat or when there is poor ventilation
 - Take breaks in cool and shaded areas and drink plenty of water during hot days
 - Provide feedback and suggestions to your supervisor or the health and safety committee (or representative) about ways to make your work less physically demanding and more efficient
 - When appropriate, wear light and breathable clothing
 - Wear sunscreen and protective clothing to prevent sunburns
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Where can I find more information?

Please see the following OSH Answers for more information:

- Hot Environments – Control Measures
https://www.ccohs.ca/oshanswers/phys_agents/heat_control.html
 - Hot Environments – Health Effects and First Aid
https://www.ccohs.ca/oshanswers/phys_agents/heat_health.html
 - Temperature Conditions – Hot
https://www.ccohs.ca/oshanswers/phys_agents/max_temp.html
 - Temperature Conditions – Legislation
https://www.ccohs.ca/oshanswers/phys_agents/temp_legislation.html
 - Humidex Rating and Work https://www.ccohs.ca/oshanswers/phys_agents/humidex.html
 - Emergency Response <https://www.ccohs.ca/topics/programs/programs/emergency/>
 - Skin Cancer and Sunlight https://www.ccohs.ca/oshanswers/diseases/skin_cancer.htm
 - Ultraviolet Radiation
https://www.ccohs.ca/oshanswers/phys_agents/ultravioletradiation.html
 - Working in Extreme Conditions
https://www.ccohs.ca/oshanswers/hsprograms/extreme_conditions.html
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