**Working in Extreme Temperatures**

|  |  |
| --- | --- |
| Effective date: | Date last revised: 333Au |

**01** September 2024 **24** September 2025

**Purpose**

The purpose of this code of practice is to minimize the risk to employees working in extreme temperature environments at their place of employment. This includes both school-based personnel and district-based personnel.

**Scope**

This code of practice applies to all school personnel as defined in the Education Act

This code of practice will be used to address hazards related to working in extreme temperatures when developing task-specific work procedures.

**Responsibilities**

School District and School Administration must ensure that every worker has received instruction, orientation, and training before the employee starts work or before the employee performs a task other than the employee was originally trained to perform.

School District and School Administration must review this code of practice with any new or recently transferred employee before they begin work.

School District and School Administration must ensure that the procedures outlined in this code of practice are followed.

School District and School Administration must monitor the temperature for all work locations. This includes outside work, buildings, and rooms that have historically had extreme temperatures as well as school buses.

Employees are responsible for ensuring their safety by following this code of practice. They are also responsible to play a role in identifying any hazard related to working in extreme temperatures and communicating such hazards to their supervisor. The supervisor will start monitoring the temperature.

**Working in high heat**

**Definitions**

**Thermal Comfort\***

**ASHRAE has defined thermal comfort in a work environment to be in the following ranges.**

|  |  |
| --- | --- |
|  | Summer |
| Sedentary Work | 19 – 24 °C |
| Physical Work | 16 – 21 °C |

\*These values assume:

– workers are wearing seasonally appropriate clothing

– the airspeed is about 0.1–0.2 meters per second (without creating a draught where sedentary work is carried out)

– humidity levels are normal (40-70%)

– workers are not directly exposed to any radiant heat sources.

**School personnel**

* Superintendents, Directors of Schools, and other administrative and supervisory personnel,
* school bus drivers,
* building maintenance personnel, including custodians,
* administrative assistants and clerks,
* teachers,
* persons other than teachers engaged to assist in the delivery of programs and services to pupils, and
* other persons engaged in support areas such as social services, health services, psychology, and guidance.

**Heat outside thermal comfort.**

When dealing with heat that is outside the thermal comfort ranges but has not reached a heat warning or high heat alert level, the strategies outlined below will help reduce the discomfort.

**High Heat Situations**

Environment and Climate Change Canada will issue a notice of possible heat warning in New Brunswick under the following conditions.

HARS has three alert levels. The levels are based on 3 factors that characterize an extreme heat event: intensity, duration, and night-time exposure.

Environment and Local Government (ELG) reviews information and identifies alert level 1, 2 or 3 base.

on established criteria to partners.

A diagram of a heat alert

Description automatically generated

**Heat Alert: Level 1**

Activated when Environment and Climate Change Canada (ECCC) issues a heat warning.

Criteria:

* 2 or more consecutive days Temp max >30°C

AND

* Temp min >18°C (on the first night)

OR

* Humidex >36°C for 2 or more days.

A chart of a heat alert

Description automatically generated

**Heat Alert: Level 3**

Activated when Environment and Climate Change Canada (ECCC) issues a heat warning.

Criteria:

* Level 1 criteria are met **plus** either of the 2 days reaches Humidex >45°C.

**Heat Alert: Level 2**

Activated when Environment and Climate Change Canada (ECCC) issues a heat warning.

Criteria:

* Level 1 criteria are met **plus** either of the 2 days will reach of 40 to 44°C.

A diagram of a heat alert

Description automatically generated

Supervisors and employees are responsible for taking appropriate steps to ensure a safe work environment in extreme temperature conditions. They are responsible to know and recognize the symptoms of heat stress, understand the factors that may influence heat stress, and the actions that can be taken to mitigate the risks.

**While under a high heat alert, the strategies listed below will be required to protect the employee and as many as practical should be implemented.**

**Monitoring Heat**

District\School Administration are required to monitor heat levels in the schools or education centers, using the humidex rating. Although the use of WBGT (wet bulb global temperature) index is preferred for most workplaces, the humidex rating may serve as an indicator of discomfort resulting from occupational exposures to heat. The chart below shows the ranges of humidex.

|  |  |
| --- | --- |
| **Humidex Range** | **Degree of Comfort** |
| 20-29 | comfortable |
| 30-39 | some discomfort |
| 40-45 | great discomfort; avoid exertion |
| above 45 | dangerous; heatstroke possible |

Schools will use a thermometer\hygrometer to measure the air temperature and humidity levels. These temperatures will be recorded on the table provided. Whenever discomfort is reported by district or school personal, any one of the strategies listed below will help, and the supervisor should inform the appropriate Director of Schools, District Facilities Assistant Manager, and District Safety. If required, WBGT measurements can be taken to help advise the Senior Admin Team on mitigating actions.

**Signs and Symptoms of heat exposure**

Whether working inside or outside during the hot summer months, employees must listen to their bodies and learn to recognize the five main forms of heat stress and their symptoms:

* Heat rash - "prickly heat rash", tiny, raised blister-like rash on the skin. \*
* Heat cramps - painful muscle spasms and excessive sweating. \*
* Heat exhaustion - headache, dizziness, weakness, nausea, and clammy skin. \*\*
* Heat syncope - fainting while standing. \*\*\*
* Heatstroke - severe headache, confusion, delirium, convulsions, loss of consciousness, and hot, dry, flushed skin\*\*\*.

\*Reference the strategies below to help reduce the signs and symptoms of heat exposure

\*\*obtain first aid to help monitor and reduce signs and symptoms of heat exposure

\*\*\*This is a medical emergency, contact First Aid and Contact 911

**Various factors can influence the onset of heat-related symptoms, including:**

* Environmental conditions: air temperature, humidity, wind speed, and radiant heat (sun).
* The intensity of work/workload.
* Duration of exposure.
* Frequency of work.
* Human factors such as physical fitness, age, medications.
* Type of clothing.
* Degree of acclimatization or becoming accustomed to the work and environmental conditions.

**Strategies for dealing with the heat:**

* Learn to recognize the signs and symptoms of heat stress in yourself, your co-workers, and students.
* Move to cool areas of the building or work location.
* Provide water breaks.
* Deliver cold treats.
* Use fans when appropriate\*
* Close blinds if available
* Open the windows to promote airflow.
* Drink plenty of water (about two glasses of water before starting work and one cup (250 ml or more) about every 15 to 20 minutes during work) and get adequate nutrition.
* Avoid caffeine, alcohol, and drugs.
* Wear light-colored, loose-fitting clothing made of breathable fabric.
* Wear a wide-brimmed hat. If a hard hat is required, attach a piece of light-colored fabric to the back and sides to shade your neck.
* Take rest breaks in a cool or ventilated area. Take more breaks during the hottest part of the day or when doing heavy work. Allow your body to cool down before beginning again.water
* Schedule work to minimize heat exposure. Do the hardest physical work during the coolest part of the day.
* Use sunscreen with an SPF of at least 30. You need to apply at least one ounce (29.58 ml) 30 minutes before sun exposure to ensure that you get the full SPF of sunscreen. Re-apply it every two hours throughout the day. (Skin Cancer Foundation recommendation)
* Wear eyewear that provides UV protection.
* When feasible the Facilities Department should have the HVAC system run a purge when the night air is cool. This will draw in fresh cool air. This is only done when the night time temperatures are lower than the daytime.

\*Although the use of fans is acceptable to improve airflow, the use of personal air conditioners is not permitted in the schools. Where the need for air conditioners has been identified by facilities or district safety due to extreme heat, the facilities department will arrange installation.

**Further action may be taken by the District at the direction of the Superintendent.**

**Working in Extreme Cold**

Working in cold environments can be not only hazardous to your health but also life threatening. It is critical that the body be able to preserve core body temperature steady at + 37°C (+ 98.6°F). This thermal balance must be maintained to preserve normal body functioning as well as provide energy for activity (or work!). The body's mechanisms for generating heat (its metabolism) must meet the challenge presented by low temperature, wind, and wetness – the three major challenges of cold environments.

**Hypothermia**, sometimes called exposure, occurs when the body can no longer produce more heat than it is losing. The body’s internal temperature then drops below 35 C. Hypothermia has three stages: mild, moderate, and severe.

There are other safety problems associated with working in cold environments - ice, snow, frost bite, burns from contact with cold metal, slowed reaction time and snow blindness.

Learn to recognize the warning signs of hypothermia:

* Severe shivering (In severe cases, shivering may stop - seek medical attention immediately).
* Pain in extremities (hands, feet, ears).
* Reduced mental capacity (confusion, difficulty speaking, etc.).

**How does our body lose heat:o HaHo**

Conduction, convection, evaporation, and breathing

**Conduction**: conduction is the loss of heat through direct contact with a cooler object

**Convection**: Convection is the loss of heat from the body to the surrounding air as the air moves across the surface of the body

**Evaporation**: Evaporation is the loss of heat due to the conversion of water from a liquid to a gas

* Perspiration/Sweating – evaporation of water to remove excess heat.
* "Insensible" Perspiration – body sweats to maintain a humidity level next to skin. Particularly in a cold, dry environment, you can lose a great deal of moisture this way and not notice that you have been sweating.
* Respiration – air is heated as it enters the lungs and is exhaled with an extremely high moisture content.

**Breathing**: Cool air is inhaled, warmed, and exhaled causing heat loss.

**Windchill**

At any temperature, you feel colder as the wind speed increases. The combined effect of cold air and wind speed is expressed simply as the “wind chill” temperature in degrees Celsius or Fahrenheit. It is essentially the air temperature that would feel the same on exposed human flesh as the given combination of air temperature and wind speed. It can be used as a general guideline for deciding clothing requirements and the possible health effects of the cold.

In Canada, the term “wind chill” or “wind chill index” is used. This factor is a measurement of a heat loss rate caused by exposure to wind and is expressed in temperature-like units.

*From: CCOHS -* [*https://www.ccohs.ca/oshanswers/phys\_agents/cold/cold\_working.html*](https://www.ccohs.ca/oshanswers/phys_agents/cold/cold_working.html)

|  |  |  |  |
| --- | --- | --- | --- |
| **Wind Chill Hazards and What to Do** | | | |
| **Wind Chill** | **Exposure Risk** | **Health Concerns** | **What to Do** |
| 0 to -9 | **Low risk** | * Slight increase in discomfort | * Dress warmly * Stay dry |
| -10 to -27 | **Moderate risk** | * Uncomfortable * Risk of [hypothermia](http://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=5FBF816A-1#X-201410301143327) and [frostbite](http://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=5FBF816A-1#X-2014103011434711) if outside for long periods without adequate protection. | * Dress in layers of warm clothing, with an outer layer that is wind-resistant. * Wear a hat, mittens or insulated gloves, a scarf and insulated, waterproof footwear. * Stay dry. * Keep active * **Consider indoor recess at colder temperatures** |
| -28 to -39 | **High Risk**: exposed skin can freeze in 10 to 30 minutes | * High risk of [frostnip](http://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=5FBF816A-1#X-201410301143429) [frostbite](http://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=5FBF816A-1#X-2014103011434711): Check face and extremities for numbness or whiteness. * High risk of [hypothermia](http://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=5FBF816A-1#X-201410301143327) if outside for long periods without adequate clothing or shelter from wind and cold. | * Dress in layers of warm clothing, with an outer layer that is wind-resistant * Cover exposed skin * Wear a hat, mittens or insulated gloves, a scarf, neck tube or face mask and insulated, waterproof footwear * Stay dry * Keep active * **Keep students indoors** |
| -40 to -47 | **Very high risk**: exposed skin can freeze in 5 to 10 minutes  (In sustained winds over 50 km/h, frostbite can occur faster than indicated.) | * Very high risk of [frostbite](http://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=5FBF816A-1#X-2014103011434711): Check face and extremities for numbness or whiteness. * Very high risk of [hypothermia](http://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=5FBF816A-1#X-201410301143327) if outside for long periods without adequate clothing or shelter from wind and cold. | * Dress in layers of warm clothing, with an outer layer that is wind-resistant. * Cover all exposed skin. * Wear a hat, mittens or insulated gloves, a scarf, neck tube or face mask and insulated, waterproof footwear. * Stay dry * Keep active. * **Consider school closure** |
| -48 to -54 | **Severe risk**: exposed skin can freeze in 2 to 5 minutes  (In sustained winds over 50 km/h, frostbite can occur faster than indicated.) | * Severe risk of [frostbite](http://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=5FBF816A-1#X-2014103011434711): Check face and extremities frequently for numbness or whiteness. * Severe risk of [hypothermia](http://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=5FBF816A-1#X-201410301143327) if outside for long periods without adequate clothing or shelter from wind and cold. | * Be careful. Dress very warmly in layers of clothing, with an outer layer that is wind-resistant. * **Cover all exposed skin** * Wear a hat, mittens or insulated gloves, a scarf, neck tube or face mask and insulated, waterproof footwear. * **Be ready to cut short or cancel outdoor activities**. * Stay dry. * Keep active. * **Consider school closure** |
| -55 and colder | **Extreme risk**: exposed skin can freeze in less than 2 minutes | * **DANGER!** Outdoor conditions are **hazardous.** | * **Stay indoors**. * **Consider school closure** |

*From:* [*"Wind Chill Index" Environment Canada (2017)*](https://www.canada.ca/en/environment-climate-change/services/weather-health/wind-chill-cold-weather/wind-chill-index.html)

**First Aid for hypothermia or frost bite**

* **Seek medical help immediately. Hypothermia is a medical emergency.**
* Move the person out of the cold, and/or insulate the person (e.g., by applying a hypothermia wrap).
* Remove wet clothing, and gently loosen or remove constricting clothing or jewelry that may restrict circulation.
* Handle the person gently. Do not massage or rub the skin.
* Allow them to lay down. No standing or walking.
* Warm by carefully applying warm water bottles, heating pads or electric blankets to the upper body (such as the armpits, chest, groin and upper back). Wrap items in towels or clothing if available. Body heat from another person can also help in an emergency.
* Give food or drinks (caffeine-free, non-alcoholic) ONLY if the individual has mild hypothermia (e.g., when the person is conscious and responsive).
* Perform CPR (cardiopulmonary resuscitation) if the victim tops breathing. Continue to provide CPR until medical aid is available. The body slows when it is very cold and, in some cases, hypothermia victims that have appeared "dead" have been successfully resuscitated.
* For frost bitten areas: loosely cover the affected area with a sterile dressing. Place some gauze between fingers and toes to absorb moisture and prevent them from sticking together.

**DO NOT:**

* DO NOT rewarm the person too quickly (e.g., do not use a heating lamp or stove, or soak in a hot bath/shower).
* DO NOT attempt to rewarm the affected frostbite area on site (but do try to stop the area from becoming any colder) - without the proper medical care, tissue that has been warmed may refreeze and cause more damage.
* DO NOT thaw the area if it may freeze again.
* DO NOT rub area or apply snow.
* DO NOT allow the victim to drink alcohol or smoke.

*From: CCOHS -* [*https://www.ccohs.ca/oshanswers/phys\_agents/cold/cold\_working.html*](https://www.ccohs.ca/oshanswers/phys_agents/cold/cold_working.html)

**Strategies for dealing with the cold**

* Wear proper clothing in layers.
  + First layer - snug-fitting and of a material that allows sweat to escape (silk or polypropylene).
  + Second layer - loose and warm (fleece, wool or down).
  + Third layer - windproof and waterproof (nylon or Gore-Tex).
* Wear mittens when working in temperatures below -17°C, gloves for light work below 4°C and -7°C for moderate work, a warm knit hat or a liner under a hard hat, and footwear that is insulated, slip-resistant and waterproof.
* Take frequent measures of temperature with the wind factor.
* Take warm-up breaks in a shelter.
* Pace work to prevent excessive sweating as the moisture will speed cooling of the body. Add or remove layers as appropriate.
* Stay hydrated. Drink water or warm, sweet beverages (sports-types drinks). Avoid caffeinated drinks.
* Know the signs of hypothermia and frostbite. Use the buddy system to watch for signs shown by your co-workers.
* Space heaters may be used provided the heater is equipped with a thermostat and is turned off when not in use.

**Boiler Operation**

Starting in later September, Power Engineers will monitor the indoor school temperature, and the weather forecast to determine the appropriate time to light the boilers.

**Heating System Failure**

In the event of a heating system failure, facilities will monitor the indoor temperature of the school, and the weather forecast. If the school’s indoor temperature falls to 15 degrees, depending on the outdoor temperature, and the time required to fix the system the recommendation will be made to the Superintendent, and the Director of Finance and Administration to close the school.

**Further action may be taken by the District at the direction of the Superintendent.**