



OCCUPATIONAL HEAT STRESS GUIDELINES

Purpose and Intent: The following guideline is intended to assist employees in recognizing symptoms to reduce the potential risk of heat stress. When performing work either indoors or outdoors precautions must be taken to minimize individual risk to heat related disorders. The chart below outlines the symptoms, treatment and preventative measures that workers must be aware of.

It is recommended that this guideline be printed and posted in your workplace in addition to any job/workplace specific programs.

Planning and Implementing: The Ministry of Labour has not set maximum temperatures for any workplace. Rather, guidelines and protective measures have been established to assist workplaces in developing health and safety programs that are job specific and incorporate known risk factors. Each workplace and job task should be addressed and re-evaluated on a daily bases by the supervisor.

Environmental Risk Factors: In order to manage heat stress several factors must be considered. Environmental factors can increase the risk of heat stress the four main factors are:

- 1) Radiant heat which is the transfer of heat from surfaces through the air to the body.
- 2) As humidity increases the evaporation of sweat reduces and impedes the body's ability to stay cool.
- 3) As the temperature rises the body must work harder to keep its internal temperature below 38 degrees Celsius.
- 4) Air movement can help lower the body's temperature if the air is cooler then the body's skin temperature. The speed of air movement can increase the rate at of the evaporation and heat exchange.

Individual Risk Factors: In combination with environmental factors, individual risk factors influence the body's ability to remove excess heat. These risk factors could include but are not limited to the age of a worker, health, physical condition, weight, medication, level of acclimatization and previous heat illness.

Other Risk Factors: When performing work whether light, moderate, heavy or very heavy in the heat it is important to evaluate the following:

Acclimatization: is the worker accustoming to performing job tasks in hot weather conditions. If the worker is new or non-acclimatized then a gradual acclimatization period will be necessary. Generally taking 1-2 weeks.

Type of Work: light, moderate, heavy or very heavy

Clothing: light summer clothing, overalls or double cloth overalls. The type of clothing a worker is wearing can increase the temperature anywhere from 3 to 5 degrees.

PREVENTATIVE MEASURES

INDOOR WORKERS:

- Close window coverings to keep the radiant heat from penetrating through the windows.
- Use fans to keep increase air movement and if possible keep doors open to promote air circulation. Increasing air movement will only help cool the body if the temperature is less than 35 degrees Celsius. Temperatures greater than 40 degrees Celsius may actually increase the body's temperature.
- Drink plenty of water to help keep your body hydrated and cool. Never wait until you feel thirsty. Thirst is a way of your body telling you that you are already dehydrated.
- Light summer weight clothing should be worn to allow free air movement and sweat evaporation.
- Keep physical activity to a minimum, rotate job tasks and/or increase breaks in extreme heat conditions.

PREVENTATIVE MEASURES

OUTDOOR WORKERS

1. Family Team Leaders/Supervisors and workers should work together in setting up work schedules. Jobs requiring heavy work when possible should be performed during the cooler part of the day (early morning or evening). Temperatures reach a peak between the hours of 11am to 4pm.
2. Schedule routine maintenance work in the cooler seasons when possible.

3. Encourage workers to drink plenty of cool water throughout the day. The Ontario Ministry of Labour Heat Stress Guidelines recommends drinking a cup of water every 20 minutes during periods of extreme heat/humidity. Drink water even when you do not feel thirsty, thirst is the body's way of communicating that dehydration is setting in.
4. Reduce the consumption of caffeinated and carbohydrate-rich beverages.
5. Workers should learn to recognize the signs and symptoms of heat stress by reviewing the attached **Heat Stress Chart** adopted from the Ministry of Labour Heat Stress Guidelines. If an employee experiences any of the symptoms of heat stress they should stop work immediately, remove themselves to a cool area and report their symptoms to their supervisor. If symptoms are severe, seek immediate medical attention.
6. Use the buddy system; often times workers do not recognize their own heat stress symptoms. Keep an eye out for each other when working in extreme heat.
7. Light summer weight clothing should be worn (whenever possible) to allow free air movement and sweat evaporation. Light coloured clothing is preferable to dark.
8. Workers are encouraged to wear a broad spectrum sunscreen containing a minimum SPF of 15 when working outdoors. Other protective measures may include a brimmed hat and sunglasses with ultraviolet radiation protection.

Please contact the Occupational Health & Safety Office at 416-397-3210 for additional information on heat stress or a copy of the Ministry of Labour Guidelines on this topic.

HEAT STRESS HAZARDS

	Cause	Symptoms	Treatment	Prevention
Heat Rash	Hot humid environment; plugged sweat glands.	Red bumpy rash with severe itching.	Change into dry clothes and avoid hot environments. Rinse skin with cool water.	Wash regularly to keep skin clean and dry.
Heat Cramps	Heavy sweating from strenuous physical activity drains a person's body of fluid and salt, which cannot be replaced just by drinking water. Cramps occur from salt imbalance resulting from failure to replace salt lost from heavy sweating.	Painful cramps commonly in the most worked muscles (arms, legs or stomach) which occur suddenly at work or later at home. Heat cramps are serious because they can be a warning of other more dangerous heat-induced illnesses.	Move to a cool area; loosen clothing, gently massage and stretch affected muscles and drink cool salted water ($\frac{1}{4}$ to $\frac{1}{2}$ tsp. salt in 1 litre of water) or balanced commercial fluid electrolyte replacement beverage. If the cramps are severe or don't go away after salt and fluid replacement, seek medical aid. Salt tablets are not recommended.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Workers should check on each other to help spot the symptoms that often precede heat stroke.
Fainting	Fluid loss and inadequate water intake and standing still, resulting in decreased blood flow to brain. Usually occurs in unacclimatized persons.	Sudden fainting after at least two hours of work; cool moist skin; weak pulse.	GET MEDICAL ATTENTION. Assess need for CPR. Move to a cool area; loosen clothing; make person lie down; and if the person is conscious, offer sips of cool water. Fainting may also be due to other illnesses.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Move around and avoid standing in one place for too long. Workers should check on each other to help spot the symptoms that often precede heat stroke.
Heat Exhaustion	Fluid loss and inadequate salt and water intake causes a person's body's cooling system to start to break down.	Heavy sweating; cool moist skin; body temperature over 38°C; weak pulse; normal or low blood pressure; person is tired and weak, and has nausea and vomiting; is very thirsty; or is panting or breathing rapidly; vision may be blurred.	GET MEDICAL ATTENTION. This condition can lead to heat stroke, which can kill. Move the person to a cool shaded area; loosen or remove excess clothing; provide cool water to drink; fan and spray with cool water. Do not leave affected person alone.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Workers should check on each other to help spot the symptoms that often precede heat stroke.
Heat Stroke	If a person's body has used up all its water and salt reserves, it will stop sweating. This can cause body temperature to rise. Heat stroke may develop suddenly or may follow from heat exhaustion.	High body temperature (over 41°C) and any one of the following: the person is weak, confused, upset or acting strangely; has hot, dry, red skin; a fast pulse; headache or dizziness. In later stages, a person may pass out and have convulsions.	CALL AMBULANCE. This condition can kill a person quickly. Remove excess clothing; fan and spray the person with cool water; offer sips of cool water if the person is conscious.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Workers should check on each other to help spot the symptoms that often precede heat stroke.

HUMIDEX RESPONSE CHART

Humidex 1 (moderate non-acclimatized and heavy acclimatized work)	Response Never ignore someone's symptoms no matter what your measure	Humidex 2 Light non-acclimatized work (sitting/standing doing light arm work)
30-37	Low <ul style="list-style-type: none"> • Alert worker to potential for heat stress. • Ensure access to water. 	34-41
38-39	Medium <ul style="list-style-type: none"> • Reduce physical activity (e.g. slower pace, double up, breaks). • Drink a cup of water every 20-30 minutes. 	42-43
40-42	Moderate <ul style="list-style-type: none"> • Reduce physical activity further. • Drink a cup of water every 10-15 minutes. 	44-45
43-44	High <ul style="list-style-type: none"> • Ensure sufficient rest and recovery time. Severely curtail physical activity. • Drink a cup of water every 10-15 minutes 	46-48
45 or over	Extreme <ul style="list-style-type: none"> • It is hazardous to continue physical activity. 	49 or over

Local weather networks will post humidity percentages as a reference or *feels like*, which refers to how the outdoor air is expected to feel in degrees Celsius when actual temperature and relative humidity are combined.