

Heat Stress Awareness

Spring and summer have the potential for hot humid weather conditions. When heat is combined with high humidity and other stresses such as physical work, loss of fluids, fatigue, or some medical conditions, it can lead to heat-related illnesses, disability, and in a worst-case scenario, even death.

Individuals who are not acclimatized to hot conditions are more susceptible to experiencing some form of heat stress. Modifying your activities may be required at the start of warm weather conditions to give your body time to adjust to the heat. Full acclimatization can take up to 14 days, however some acclimatization is evident after 4 days. Consider performing labour intensive work in the early morning hours when temperatures are cooler. Staying hydrated, taking breaks, wearing light breathable clothing, and avoiding direct sunlight are some ways to prevent heat stress illnesses and injuries.

It is very important to recognize the signs and symptoms of heat-related illnesses. A summary of some heat-stress-related disorders, causes, symptoms, treatment and prevention is presented in the table below.

	Cause	Symptoms	Treatment	Prevention
Heat Cramps	Heavy sweating from strenuous physical activity drains person's body of fluid and salt, which cannot be replaced just by drinking water. Heat cramps occur from salt imbalance resulting from failure to replace salt lost from heavy sweating.	Painful cramps occur commonly in the most worked muscles (arms, legs or stomach); this can happen 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 (1½ to 2½ mL 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.
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 cause death quickly. 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.

http://www.labour.gov.on.ca/english/hs/pubs/gl_heat.php

Please refer to [RMM 408 Heat Stress Prevention Program](#) for more information about heat stress.

Supervisors should be familiar with the Humidex Based Heat Response Plan below, an excerpt from RMM 408.

**Appendix 1
Humidex Based Heat Response Plan**

What is it?

- The Humidex plan is a simplified way of protecting workers from heat stress which is based on the 2007 ACGIH Heat Stress TLV® (Threshold Limit Value®) which uses wet bulb globe temperatures (WBGT) to estimate heat strain. These WBGT's were translated into Humidex.
- The ACGIH specifies an action limit and a TLV® to prevent workers' body temperature from exceeding 38°C (38.5°C for acclimatized workers). Below the action limit (Humidex 1 for work of moderate physical activity) most workers will not experience heat stress. Most healthy, well-hydrated, acclimatized workers not on medications will be able to tolerate heat stress up to the TLV® (Humidex 2 for moderate physical activity). Between Humidex 1 and Humidex 2, general heat stress controls are needed and above Humidex 2 job-specific controls are needed.
- **Note:** in the translation process some simplifications and assumptions have been made, therefore, **the plan may not be applicable in all circumstances and/or workplaces** (follow steps #1-5 to ensure the Humidex plan is appropriate for your workplace).

Humidex 1	Response	Humidex 2
25 – 29	supply water to workers on an “as needed” basis	32 – 35
30 – 33	post Heat Stress Alert notice; encourage workers to drink extra water; start recording hourly temperature and relative humidity	36 – 39
34 – 37	post Heat Stress Warning notice; notify workers that they need to drink extra water; ensure workers are trained to recognize symptoms	40 – 42
38 – 39	work with 15 minutes relief per hour can continue; provide adequate cool (10-15°C) water; at least 1 cup (240 mL) of water every 20 minutes worker with symptoms should seek medical attention	43 – 44
40 – 41	work with 30 minutes relief per hour can continue in addition to the provisions listed previously;	45 – 46*
42 – 44	if feasible, work with 45 minutes relief per hour can continue in addition to the provisions listed above.	47 – 49*
45 or over	only medically supervised work can continue	50* or over

*at Humidex exposures above 45, heat stress should be managed as per the ACGIH TLV®

Humidex 1

General Controls: General controls apply to unacclimatized workers and include providing annual heat stress training, encouraging adequate fluid replacement, permitting self-limitation of exposure, encouraging watching out for symptoms in co-workers and adjusting expectations for workers coming back to work after an absence. Workers doing moderate work are considered acclimatized in Ontario only if they regularly work around heat sources (e.g. in foundries, around ovens, etc.). NOTE: clothing and radiant heat must also be taken into account when using the guidelines (see steps #1-5 outlined on page 3).

Humidex 2

Job-Specific Controls: Job-specific controls include (in addition to general controls) engineering controls to reduce physical job demands, shielding of radiant heat, increased air movement, reduction of heat and moisture emissions at the source, adjusting exposure times to allow sufficient recovery, and personal protective equipment that provides for body cooling.