The *BSO Plus Safety Topic* is a review designed from the BSO Plus agenda. This safety topic is your way to stay current on the safety information over the 3 years, so please ensure you submit the completed test to your employer for record retention.

HEAT STRESS

What is heat stress?

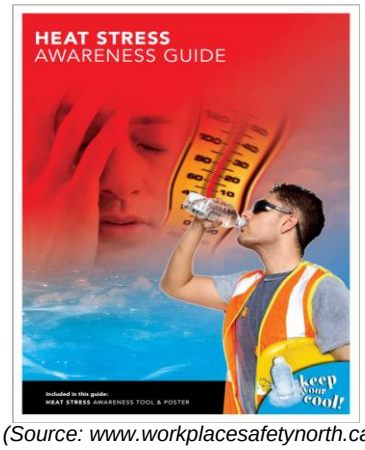
Heat stress refers to a group of physical conditions that can happen from overexposure to or overexertion in excess environmental temperatures. These physical conditions, which can affect the body's ability to cool itself, can range from minor disorders to severe disorders, each with their own set of causes, symptoms and treatment, as outlined below.

	Causes	Symptoms	Treatment
Heat Rash	Humid environment; plugged sweat glands.	Red bumpy rash with severe itching.	• Change into clean dry clothes often • Rinse skin with cool water • If possible, avoid hot environments
Heat Cramps	Heavy sweating from strenuous physical activity drains the body of fluid and salt, which cannot be replaced just by drinking water. Heat cramps occur from the salt imbalance.	Painful cramps in the most worked muscles, like the arms, legs, or stomach, which can occur suddenly or later at home.	• Move to a cool area • Loosen clothing, and gently massage affected muscles • Drink cool salted water or commercial electrolyte replacement beverage • Seek medical aid if necessary
Heat Exhaustion	Fluid loss and inadequate salt and water intake causes the body's cooling system to start to break down.	Heavy sweating; cool moist skin; body temperature over 38°C; weak pulse; nausea and vomiting; very thirsty; panting or breathing rapidly.	• SEEK MEDICAL AID (condition can lead to heat stroke) • Move to a cool shaded area • Loosen / remove excess clothing • Drink cool water • Fan and spray with cool water
Heat Stroke	When the body has used up all its water and salt reserves, it will stop sweating. This can cause the body temperature to rise. Heat stroke may develop suddenly or may follow from heat exhaustion.	Body temperature over 41°C plus any one of the following: weak, confused or acting strangely; hot, dry, red skin; fast pulse; headache or dizziness. Possible fainting or convulsions in late stages.	• CALL AMBULANCE (condition can lead to death) • Remove excess clothing • Fan and spray with cool water • Offer sips of cool water if person is conscious

This table is adapted from the Ministry of Labour's Health and Safety Guideline for Heat Stress

In Ontario, heat stress is usually of greatest concern at the beginning of the summer season when people haven't yet adjusted to the heat. Anyone can suffer from heat stress. When higher temperatures and humidity are combined with other stresses, such as performing heavy physical work, wearing certain types of protective clothing and/or equipment, taking certain medications or having pre-existing medical conditions, it can lead to heat related illnesses.

How can you help protect yourself from heat-stress-related disorders?



(Source: www.workplacesafetynorth.ca)

Information and Procedures:

- Get informed - ask about your employer's policy and procedures for controlling heat stress in the workplace
- Follow heat stress prevention steps, such as altering the pace of work, taking rest breaks, and rehydrating regularly
- Schedule more frequent work breaks or for work to be completed during a cooler part of the day
- If you take any medications, discuss with your doctor if any of these may affect your heat tolerance

Clothing:

- If possible, wear loose, lightweight clothing that allows sweat to evaporate
- Wear light coloured clothing - light colours absorb less heat from direct sunlight than dark colours
- If working outdoors, minimize skin exposure to UV rays by using sunscreen and wearing hats, sunglasses, and long sleeved, lightweight shirts

Food and Water:

- Avoid alcohol or beverages with caffeine, because both of these make the body lose water and increase the risk for heat stress
- Avoid eating large meals before working in hot environments, because these make your digestion system work harder, increasing your body temperature
- Drink small amounts of water (8 oz.) every 20 minutes – don't wait until you are thirsty

Duties of Employers

Employers have a duty under clause 25(2)(h) of the *Occupational Health and Safety Act* to take every precaution reasonable in the circumstances for the protection of a worker. This includes developing policies and procedures to protect workers in environments that are hot because of hot processes and/or weather.

Employers can help keep workers safe by:

- Assessing the demands of all jobs and having monitoring and control strategies in place for hot days and hot workplaces.
- Making sure everyone is properly acclimatized.
- Training workers to recognize factors which may increase the risk of developing a heat related illness and the signs and symptoms of heat stress and starting a "buddy system" since people are not likely to notice their own symptoms.

See the following page for the Safety Partnership's Recommended Heat Stress Guidelines.

Safety Partnership Heat Stress Guidelines:

Heat Stress Controls for Various Humidex Ranges & Working Conditions (for un-acclimatized workers)			
Conditions	**Light**	**Moderate**	**Heavy**
WORK	• Sitting with light manual work with hands or hands and arms, and driving • Standing with some light arm work and occasional walking	• Sustained moderate hand and arm work • Moderate arm and leg work • Moderate arm and trunk work • Light pushing and pulling • Normal walking	• Intense arm and trunk work • Carrying and shoveling • Manual sawing • Pushing and pulling heavy loads • Walking at a fast pace
CLOTHING	• Less than moderate clothing	• Loose fitting outer layer (e.g. coveralls) plus cotton T-shirt and shorts	• Protective clothing over moderate clothing (e.g. disposable coveralls, chemical suits, full-face respirator)
RADIANT HEAT	• Temperature controlled, cooled environment	• Partial sunlight	• Direct sunlight • Near other radiant heat sources (e.g. furnace, boiler, hot equipment etc.)
ACTION	• For light conditions, consider decreasing one colour category in table below	• For moderate conditions use the colour categories in table below	• For heavy conditions, increase at least one colour category in table below

Category	Humidex Ranges ºC	Actions	Liquids
Green	33 to < 38	• Issue recognition / alerts	• Drink water
Yellow	38 to < 40	• Reduce physical activity to 45minutes/hour • Slower pace	• Drink 1 cup of water every 20 minutes
Orange	40 to < 42	• Reduce physical activity to 30 minutes/hour • Slower pace	• Drink 1 cup of water every 20 minutes
Red	≥ 42	• Stop all non-essential work • Essential work can proceed with controls (e.g. modified work hours, work rotation, fans, etc.)	• Drink 1 cup of water every 20 minutes

NOTE 1: Time away from physical activity is to be taken in shaded area, near work location

NOTE 2: Humidex is to be measured in direct sunlight at worksite

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