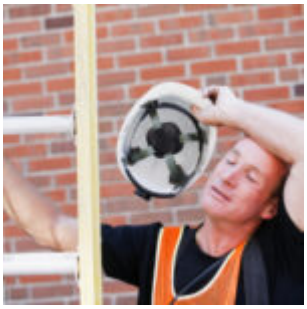
# OHS PROGRAM: Answers to 7 FAQs about Heat Stress



It’s easy for safety professionals to spend a lot of time focusing on the safety hazards they can see, such as unguarded openings, pinchpoints, spills, etc. You can overlook those ‘invisible’ hazards that can be just as deadly. Heat stress is a good example of a hazard that it isn’t seen but felt. Extended exposure to high temperatures can endanger workers. For example, between 1954 and 2000, 120 people on average died *annually* in Toronto alone from heat-related illnesses. And employers can be held liable if workers get sick or die from heat stress. So with summer weather around the corner, it’s a good time to brush up on your knowledge of this safety hazard

and how to protect workers from it. So here are answers to seven frequently asked questions (FAQs) about this seasonal safety topic.

## 7 FAQS ABOUT HEAT STRESS

[learn_more caption="**Q What Exactly Is Heat Stress'**"]

**A** Heat stress is an umbrella term used to describe the stress or impact on the body when it's exposed to high temperatures and/or humidity for lengths of time. There are, in fact, several different types of heat-related illnesses:

- **Heat stroke**: the most serious type of heat illness is a result of body heat overload;
- **Heat exhaustion**, which is caused by excessive loss of water and salt;
- **Heat edema**, which is a swelling of hands, feet and ankles;
- **Heat rash**, a red bumpy rash with severe itching; and
- **Heat cramps**, which usually occur in the most worked muscles, such as arms, legs or stomach.

Heat stress is, in fact, not a result of just the temperature but also the humidity level. The humidex combines the temperature and humidity into one number to reflect how hot, humid weather feels to the average person:

- Less than 29: No discomfort;
- 30 to 39: Some discomfort;
- 40 to 45: Great discomfort; avoid exertion; and
- Above 45: Dangerous; heat stroke possible.

[/learn_more]

[learn_more caption="**Q What Are the Symptoms of Heat Stress'**"]

**A** The symptoms that a worker is experiencing heat stress vary and may include:

- Dizziness or fainting;
- Nausea or vomiting;
- Headache;
- Confusion;
- Rapid breathing and heartbeat;
- Weakness;
- Extreme thirst, such as a dry mouth or sticky saliva;
- Heavy sweating;
- Decreased urination with unusually dark yellow urine;
- Red, hot, dry skin; and
- Convulsions.

[/learn_more]

[learn_more caption="**Q Is Heat Stress a Hazard Only in the Summer'**"]

**A** Many workplaces have to worry about heat stress only in the warm weather. But for others, such as bakeries, foundries, commercial kitchens, etc., it's a hazard year-round. And it may also be a regular hazard for workers who perform certain kinds of jobs, such as work near furnaces or in boiler rooms.

*Example*: An Ontario bakery worker died of heat stress on the job. The outdoor temperature was 34° C; inside the bakery, the temperatures topped 36°. The Ministry of Labour (MOL) charged the bakery with violating the general duty clause because it didn't have a heat stress policy as required by the MOL guidelines. The bakery pleaded guilty and was fined $215,000 [*Weston Bakeries Limited*, Govt. News Release, Feb. 18, 2004].

[/learn_more]

[learn_more caption="**Q Do the OHS Laws Address Heat Stress'**"]

**A** Yes, but not all jurisdictions address[box]**Government** this hazard directly in their OHS**Heat Stress** regulations. Ten jurisdictions'Fed, BC, MB,**Guidelines**

NB, NL, NS, PE, QC, SK and YT'have specific sections in their OHS regulations that address the temperature or 'thermal conditions' in the workplace. For example, Part 7 of BC's *OHS Regulations* spell out requirements that apply to a workplace if 'a worker is or may be exposed to thermal conditions which could cause heat stress.'

The OHS regulations in the four remaining jurisdictions'AB, NT, NU and ON'don't specifically address heat stress or workplace temperatures. But the duty to protect workers from heat stress comes from the so-called 'general duty' clause in each OHS law. And in fact, some jurisdiction have stated outright that the general duty includes an obligation to protect workers from heat stress. For example, according to a heat stress guideline from the Ontario MOL, '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 hot environment policies and procedures to protect workers in environments that are hot because of hot processes and/or weather.'

In addition, most jurisdiction provide guidelines on protecting workers from heat (and often cold) stress. Although such guidelines aren't legally binding, OHS regulators and courts will often look to them when determining whether you took all reasonable steps to protect workers from

**AB:** *Best Practice: Working Safely in the Heat and Cold*

**BC:** *Preventing Heat Stress at Work*

**MB:** *Guideline for Thermal Stress*

**NL:** *Health and Safety Guidelines: Heat Stress*

**NT/NU:** *Thermal Conditions Code of Practice*

**NS:** *Heat Stress*

**ON:** *Heat Stress Health and Safety Guidelines*

**PE:** *Guide to Prevention of Heat Stress at Work*

**SK:** *Working under Hot Conditions*

**YK:** *Hot Working Conditions*
[/box]

extreme heat. So in a practical way, government guidelines have the force of law. (See the box on the right for a list of heat stress guidelines from various jurisdictions.)

***Insider* Says:** For more on how the jurisdictions regulate heat stress, see 'The Law of Heat Stress: What Are an Employer's Legal Obligations'' June 2006, p. 13.

[/learn_more]

[learn_more caption="**Q At What Temperature are the Heat Stress Requirements Triggered'**"]

**A** Although it varies by jurisdiction, the heat stress requirements are usually triggered when 'thermal conditions' exceed safe levels, which are often based on the Threshold Limit Values (TLVs) for heat exposure set by the American Conference of Governmental Industrial Hygienists (ACGIH). TLVs are based on both the air temperature and humidity level and essentially show how long workers can be expected to work in various conditions before they run the risk of heat stress. Exposure levels are based on thermal conditions, type of work (light, moderate or heavy) and the clothing or equipment worn by workers.

[/learn_more]

[learn_more caption="**Q What Steps Should We Take to Protect Workers from Heat Stress'**"]

**A** There are some basics steps you can take to protect your workers if they're at risk of heat stress, including:

- Train workers on the dangers of heat illness and how to recognize the signs and symptoms of the various types of heat stress (For example, you could post this

infographic on summer health and safety hazards in the workplace.);
- Provide workers with cool, fresh water to drink;
- Provide a shaded area for workers to cool down in;
- Give workers time to get acclimated to the heat, especially new workers and during a heat wave; and
- Try to limit outside or especially rigorous work to the cooler times of day.

However, the most important thing you can do is prepare a heat stress plan for preventing heat-related illnesses and responding to them when they occur. In fact, the OHS regulations may require you to develop and implement such a plan. Heat exposure control plans should generally:

**Set a trigger for heat stress measures.** Set a temperature or thermal index at which the requirements for heat stress measures will be triggered. As noted above, many jurisdictions limit heat exposure levels based on the ACGIH's TLVs; some includes their own heat stress limits in their regulations. If your jurisdiction doesn't specify a standard to use, you can use different trigger, such as:

- Humidex reaching or exceeding 35;
- Environment Canada issuing a Humidex advisory (air temperature exceeds 30§C and Humidex exceeds 40); or
- Occurrence of a heat wave (three or more days of temperatures of 32§C or more).

**Require regular monitoring of temperature and humidity levels.** The only way you'll know when the heat stress trigger has been reached is if you regularly monitor temperature and humidity levels in the workplace (whether indoor or outdoor). So assign someone to measure the temperature and humidity levels at designated areas throughout your workplace. If your OHS regulations and/or government guidelines spell out the method to be used to measure the temperature and/or humidity level, make sure the assigned person uses that method. (For

information on monitoring the heat, see 'Compliance & the Technology of Safety: Heat Stress Monitors,' June 2006, p. 17.)

**Adopt engineering controls.** Always try to use engineering measures to control the temperature in your workplace before using other safety measures. Examples of engineering controls include:

- Installing insulation and reflective heat barriers;
- Venting hot air and steam;
- Air conditioning;
- Using fans to improve air circulation; and
- Using machinery, such as hoists and lift tables, to make work less strenuous.

**Adopt administrative controls.** If engineering controls aren't sufficient to reduce or control the temperature, use administrative controls such as:

- Assessing job demands and monitoring control strategies for hot days and workplaces;
- Scheduling strenuous job tasks for cooler times of the day, such as early morning or evening;
- Permitting workers to take longer and more frequent rest breaks;
- Providing cool drinking water for workers and reminding them to drink a cup every 20 minutes or so;
- Limiting how long workers work in direct sunlight;
- Assigning additional workers or slowing down the pace of the work; and
- Making sure everyone is properly acclimated to the temperature.

**Require training.** The plan should require all workers and supervisors to be trained on the signs, symptoms and prevention of heat stress.

**Describe first aid.** Your plan should also describe the

appropriate first aid measures for each type of heat stress, including heat cramps, heat exhaustion and heat stroke.

**Require appropriate clothing.** Your plan should require workers to wear appropriate clothing for the temperature, such as lightweight summer clothing. In fact, wearing the wrong clothes can create heat stress issues. (See, 'Winners & Losers: When Do Workplace Clothing Requirements Create Heat Stress Hazards'' 06/06, p. 10.) If they work outdoors, they should wear light colours. It might be appropriate to require clothing for high radiant heat and water or ice-cooled insulated clothing for extremely hot temperatures. (For workers who work outside, it's also a good idea to recommend that they wear sunscreen at all times.)

***Insider* Says:** Here's a model humidex-based heat stress response plan that you can adapt for your workplace.

[/learn_more]

[learn_more caption="**Q Can Workers Refuse to Work Because It's Too Hot'**"]

**A** The risk of heat stress *can* be valid grounds for refusing unsafe work. Because heat stress is recognized as an occupational hazard, the risk of suffering heat stress can be one of the dangers triggering a worker's right of refusal, as has been confirmed in court cases.

*Example:* A cook refused to work in the dining car kitchen of a train because of extreme heat. The railway company claimed that the refusal wasn't justified because high temperatures are an inherent part of the job. So the cook can no more refuse to work because the kitchen is hot than a policeman can refuse to go on patrol in a dangerous neighbourhood because he could be assaulted, it argued. The arbitrator wasn't persuaded and upheld the refusal. The extreme heat in the dining cars

'constitutes a danger within the meaning of' the refusal law, the arbitrator ruled [*LeBlanc & VIA Rail Canada Inc.*, CLRB Decision No. 714, Board File: 950-93, Nov. 18, 1988].

In determining whether a work refusal was justified based on the risk of heat stress, courts will consider various factors. In handling a refusal by a worker because of the threat of heat stress, you should consider the same factors, which include;

- The physical conditions, including the temperature and humidity level;
- The worker's clothing;
- Any engineering controls, such as ventilation, fans or air conditioning;
- Physiological factors, such as the worker's core body temperature and heart rate; and
- Any administrative measures, such as rate of breaks.

***Insider* Says:** For more on heat stress-related work refusals, see 'Heat Stress as Grounds for Refusing Work,' June 2006, p. 1. And for more information on refusals in general, go to the Work Refusals Compliance Centre.

[/learn_more]

**BOTTOM LINE**

In the summer of 2012, there were about 82 heat-related deaths in the US and Canada. Who knows what the weather will be like this summer. But some days will certainly be very hot and humid. So now is the time to assess the risk of heat stress to your workers and take steps to protect them if needed.

**HEAT STRESS RESOURCES**

- Legal obligation to protect workers from heat stress
- An infographic on summer health and safety hazards
- A model humidex-based heat stress response plan

- A heat stress awareness tool
- The role of heat stress monitors
- A hand out for workers on the danger signs of heat illnesses
- Several videos on heat stress.

[/box]