



Heat Stress Prevention Guidelines

Purpose

Simon Fraser University (SFU) has established these heat stress guidelines to protect the health of the university students, faculty, and staff. The goal of these guidelines is to minimize the detrimental effects of excessive heat on SFU employees who are required to work outdoors or within indoor environments with elevated temperatures.

Background

“Heat stress” is the net heat load on the body from a combination of factors: environmental conditions, demands of the work, clothing, and personal characteristics. Four environmental factors affect the amount of stress a worker experiences in a hot environment: temperature, humidity, air velocity and radiant heat. Examples of radiant heat include direct heat from the sun or heat radiating from a source such as a furnace. Job-related factors that affect heat stress include work rate and physical effort required, type of clothing and protective equipment used, and duration of activity. All of these factors need to be evaluated in order to minimize their impact on the worker. Personal characteristics such as age, weight, physical fitness, and acclimatization to the heat also need to be factored in to determine those people and areas at high risk.

Heat Disorders

If the body is unable to cool itself, by sweating or increasing blood flow to the skin, the body temperature increases and the person experiences heat stress. There are a range of heat disorders that can result from heat stress which are outlined in greater detail below.

Listed in Table 1 are the common heat disorders with the accompanying symptoms and appropriate first aid measures.

Table 1: Heat Disorders

	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. 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 a balanced commercial fluid electrolyte replacement beverage. If the cramps are severe or don't go away after salt and fluid	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.



Table 2: Screening criteria for heat stress exposure (WBGT values in °C) for 8 hour work day five days per week with conventional breaks

Allocation of Work in a Work/Rest Cycle	Threshold Limit Value (TLV)				Action Limit			
	Light	Moderate	Heavy	Very Heavy	Light	Moderate	Heavy	Very Heavy
75-100%	31.0	28.0	--	--	28.0	25.0	--	--
50-75%	31.0	29.0	27.5	--	28.5	26.0	24.0	--
25-50%	32.0	30.0	29.0	28.0	29.5	27.0	25.5	24.5
0-25%	32.5	31.5	30.5					

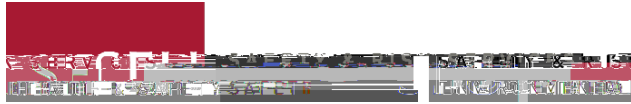


Table 3: Humidex based response guide

Humidex 1	Response	Humidex 2
	Heat Stress Alert: Encourage workers to drink water, start recording hourly temperature and relative humidity	
	Recognize symptoms	Ensure workers are trained

Source: Ontario Ministry of Labour Health and Safety Guidelines: Heat Stress (June 2014)

For more information on Humidex, please refer to the OHCOW [Humidex Based Heat Response Plan](#).

Note, please refer to the EHS webpage for posted alerts.

For Help and More Information

If you are concerned that your area may be exceeding the above guidelines or if you have any questions, please contact the SFU Environmental Health and Safety Office or the [Program Manager – Indoor Environmental Quality](#).