



Listuguj Mi'gmaq First Nation

Heat Stress

Purpose:

To provide guidelines for working in hot environments

Procedure:

EXTREME HEAT

What is Heat Stress

There are several factors which influence heat stress.

- Air temperature
- Humidity (moisture in the air)
- Cooling (evaporation of sweat)
- Radiant Heat (sun, furnace, fire, molten materials)
- Physical Activity (how hard your working)
- Acclimatization (to what degree is the body adjusted to ambient temperature)

The human body produces heat by exercise. When the body gets too hot it sweats. Sweat evaporating from the skin surface is what cools and helps to regulate body temperature.

Environmental factors such as temperature, radiant heat and humidity levels also add to the body's heat stress. High humidity in the air slows down the evaporation of sweat causing the body to accumulate more heat. The higher the body's temperature the more severe the heat stress symptoms.

Acclimatization occurs after being in a heat stress environment for five to seven days. During this time the body becomes better at sweating, retaining salt, and moving blood to the skin surface for cooling. Once acclimatized, workers are able to work longer in hot environments (See Humidex 2).

Progressive Signs of Heat Stress

Heat stress symptoms may range from minor to severe. It is important to be able to recognize the signs at the early stages.

HEAT RASH

- Red itchy bumpy rash
 - Caused by plugged sweat glands on the skin
 - Change into dry clothes, rinse skin with cool water

SUNBURN

- Red, painful, blistering and peeling skin
 - Too much sun exposure
 - Open blisters should seek medical help
 - Use sun block and work in the shade

OHS-SOP-011

Issue date: 10-Sept-20

Rev. date: 09-June-21

Issue #: 2

Only the electronic version of this document
is considered to be up-to-date



Listuguj Mi'gmaq First Nation Heat Stress

HEAT CRAMPS

- Painful cramps in arms, legs or stomach- may occur during work or later at home
 - Lack of salt in the body due to excessive sweating
 - Move to cool area, loosen clothing, drink an electrolyte replacement drink. If cramps persist seek medical assistance

FAINTING

- Losing consciousness after working at least two continuous hours. Cool moist skin, weak pulse
 - Fluid loss due to inadequate intake
 - Move to a cool area, loosen clothing, get person to lie down and drink cool water. **Assess person for CPR**

HEAT EXHAUSTION

- Heavy sweating, body temperature above 38°C, weak pulse, tired, nausea or vomiting, thirsty, fast breathing, blurred vision
 - Fluid and salt loss. Body has lost its ability to cool down
 - Move to a cool area, loosen clothing, provide cool drinking water, fan and spray person with cool water, **seek medical attention**

HEAT STROKE

- Weak, confused, acting strangely- upset, dry hot red skin, fast pulse, headache, dizziness, loss of consciousness, convulsions, body temperature above 41°C
 - Loss of fluids and salt
 - **Call for ambulance**, remove excess clothing, Cool with water mist and fan, get person to drink if conscious. **If this degree of heat stress is left untreated; it is FATAL**

How to Assess Heat Stress

Temperatures are available on the Environment Canada website:

https://weather.gc.ca/city/pages/nb-2_metric_e.html

The site lists air temperature and humidity levels.

Refer to the following chart to determine the heat stress



Listuguj Mi'gmaq First Nation Heat Stress

Heat Stress Chart

°C	Relative Humidity (in percent)																		
	100	95	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10
49																			50
48																			49
47																		50	47
46																		49	46
45																	50	47	45
44																	49	46	43
43																49	47	45	42
42															50	48	46	43	41
41															48	46	44	42	40
40														49	47	45	43	41	39
39													49	47	45	43	41	39	37
38												49	47	45	43	42	40	38	36
37											49	47	45	44	42	40	38	37	35
36									50	49	47	45	44	42	40	39	37	35	34
35								50	48	47	45	43	42	40	39	37	36	34	33
34							49	48	46	45	43	42	40	39	37	36	34	33	31
33					50	48	47	46	44	43	41	40	39	37	36	34	33	32	30
32			50	49	48	46	45	44	42	41	40	38	37	36	34	33	32	30	29
31	50	49	48	47	45	44	43	42	40	39	38	37	35	34	33	32	30	29	28
30	48	47	46	44	43	42	41	40	39	37	36	35	34	33	31	30	29	28	27
29	46	45	43	42	41	40	39	38	37	36	35	33	32	31	30	29	28	27	26
28	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
27	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25		
26	39	38	37	36	35	34	33	33	32	31	30	29	28	27	26	25			
25	37	36	35	34	33	33	32	31	30	29	28	27	26	26	25				
24	35	34	33	33	32	31	30	29	28	28	27	26	25						
23	33	32	31	31	30	29	28	28	27	26	25								
22	31	30	30	29	28	27	27	26	25	25									
21	29	29	28	27	26	26	25												

Find the temperature in left column and the humidity across the top. The number at the intersect is the Humidex value.

Use the humidex number in the following chart to determine which actions are required.
Humidex 1 column is for non-acclimatized workers performing moderate work.
Humidex 2 column is for acclimatized workers performing moderate work

Humidex 1 general controls	ACTION RECOMMENDED	Humidex 2 specific controls
30 – 37	Warn for symptoms and extra water	36 – 42
38 – 39	Work with 15 minutes/hour relief	43 – 44
40 – 41	Work with 30 minutes/hour relief	45 – 46*
42 – 44	Work with 45 minutes/hour relief	47 – 49*
45+	Hazardous to continue physical activity	50+*

* For Humidex ranges above 45, heat stress should be managed as per the ACGIH TLV

Moderate work: Doing some lifting and pushing



Listuguj Mi'gmaq First Nation Heat Stress

Humidex 1 General Controls:

- provide heat stress training
- encourage adequate fluid replacement
- permit self-limitation of exposure
- encourage employees to watch out for symptoms in co-workers
- adjust expectations for workers returning from an absence.

Humidex 2 Specific Controls (in addition to general controls)

- engineering controls to reduce physical job demands
- shield from radiant heat
- increase air movement
- reduce heat and moisture emissions at the source
- adjust exposure times to allow sufficient recovery
- personal body-cooling equipment

Other precautions:

- Provide and drink plenty of fluids, even if you are not thirsty
- Wear appropriate clothing (sleeved shirt, pants, hat, safety footwear)
- Take short frequent breaks to cool down and hydrate
- Look for signs of heat stress in yourself and others
- Work in the shade when possible
- Plan hard work tasks for cooler times of the day

Documents:

OHSCO Heat Stress Awareness Guide

Environment Canada website <https://weather.gc.ca>

Regulation Respecting OH&S Div. XIII 121-129, Schedule V Pg. 211-218

NB OH&S General Regulation 91-191 section 21-23 & 44

OHS-SOP-011

Issue date: 10-Sept-20

Rev. date: 09-June-21

Issue #: 2

Only the electronic version of this document
is considered to be up-to-date