



Working in Hot Conditions

Standard
Operating
Procedure

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1.0 Persons Affected

This Standard Operating Procedure (SOP) affects:

All employees/contractors that are required to work in hot conditions.

2.0 Purpose

This SOP provides:

The information that employees/contractors require to work in hot conditions.

3.0 Rationale

This SOP ensures the following:

- Will reduce the risk of injury from the hazards associated with working in hot conditions.

4.0 Scope

In-the-Scope of the Procedure

- The procedure includes the following:
 - The roles and responsibilities of employees/contractors
 - The preventive measures of heat stress
 - The signs and symptoms of heat stress
 - The First Aid Treatment for heat cramps, heat exhaustion and heat stroke

Out-of-the-Scope of the Procedure

- The procedure does not include the following:
 - The impact of excessive heat on equipment

5.0 Policies and Regulatory Requirements

This SOP is a result of the following policies, regulations, industry standards, and corporate directives and standards:

Policies:

- Personal Protective Equipment Policy
- Job Hazard Assessment Policy
- Emergency Response Planning Policy
- Hazard Controls Policy



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Regulatory Requirement(s)

Saskatchewan Occupational Health & Safety Regulations

- Part VI, Section 70

Other

- SaskPower Safety Rulebook
- SaskPower Standards and Processes in Support of Corporate Safety Policies

6.0 Roles, Responsibilities and Prerequisites

In-the-Scope of the Procedure Role(s)	Quantity Required	Responsibilities	Prerequisites
Employees/ Contractors	1 or more	1. Consider temperature before starting work	

7.0 Tools and Equipment

Tools and Equipment and Quantity Required:

- First aid emergency kit
- Thermometer or other source to determine the current temperature

8.0 Planning and Preparation Checklist

Things to Check Before Starting the Procedure:

- Complete Hazard and Risk Assessment
- Applicable Personal Protective Equipment (PPE) is available and in good condition.
- Appropriate clothing for working conditions
- Method of Communication while working alone

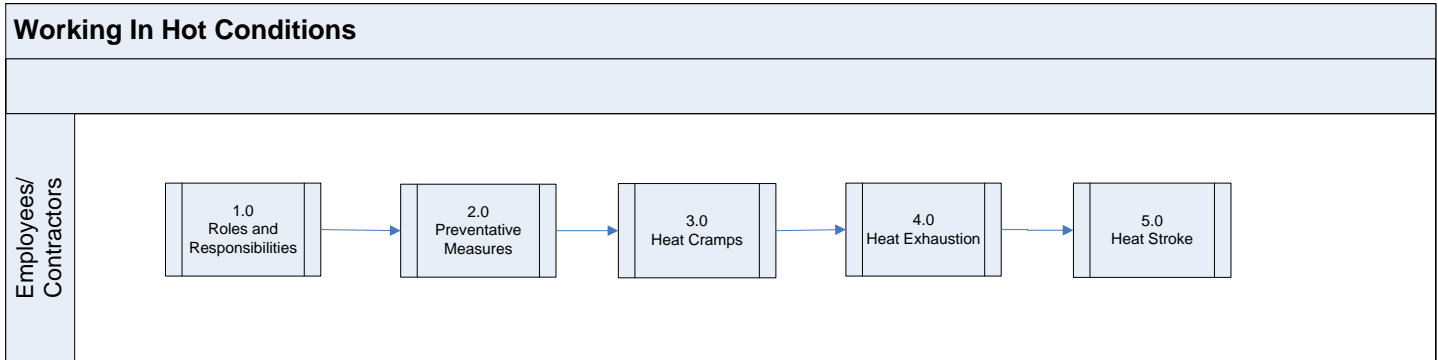


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9.0 Procedure

High Level Flowchart



The Procedure

Hot working conditions are present throughout our facilities and field work. These conditions expose employees/contractors to thermal stress that can affect their health, safety and productivity. Work operations involving high air temperatures, radiant heat sources, high humidity, direct physical contact with hot objects, or strenuous physical activities have a high potential for inducing heat stress in employees.

The body can gain heat in two ways; it can generate heat itself through work activity, and it can absorb heat from the environment. Cases of heat stress have been reported when the air temperature was relatively low but the physical activity level of the work was very high.

Rest breaks for working in heat. It is recommended that where the temperature at work exceeds 26°C, measures should be taken to prevent the onset of heat stress. Rest breaks should be introduced and modified by negotiation to suit local conditions, but it must be remembered that rest breaks are important preventative measures. It is not acceptable to wait until employees are already suffering heat stress before implementing preventative measures.

The temperatures identified in the chart below are a simple thermometer reading combined with the reported humidity to identify the work area thermal conditions. For special circumstances SaskPower shall provide an instrument for measuring thermal conditions.



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Humidex

Temperature in Celsius	Relative Humidity								
	25%	30%	40%	50%	60%	70%	80%	90%	100%
38	42	43	47	54	57	*	*	*	*
37	40	42	45	49	54	55	58	*	*
36	39	40	43	47	51	56	57	58	*
35	37	38	42	45	48	51	54	57	*
34	36	37	41	43	47	49	52	55	58
33	34	36	38	42	44	47	50	52	55
32	33	34	37	39	42	45	47	50	52
31	31	33	35	38	40	43	45	48	50
30	31	31	34	36	38	41	43	46	48
29	29	30	32	34	37	38	41	44	46
28	28	29	31	33	35	37	39	41	45
27	27	28	29	31	33	35	37	39	41
26	26	27	28	29	31	33	35	37	39
25	25	26	27	28	30	32	33	35	37
24	24	25	26	27	28	30	32	33	35
23	23	23	24	25	27	28	30	32	33

* = Beyond the Earth atmosphere's ability to hold water vapor.

Humidex - General Heat Stress Index

Danger Category	Humidex	Heat Syndrome
Extreme Danger	> 55	Heatstroke imminent with continued exposure.
Danger	40 - 54	Great discomfort. Avoid exertion. Seek a cool shady location. Heat cramps or heat exhaustion likely. Heat stroke possible with continued exposure and / or physical activity.
Extreme Caution	30 - 39	Some discomfort. Heatstroke, heat exhaustion and heat cramps possible with prolonged exposure and / or physical activity.
Caution	< 29	Little discomfort. Fatigue possible with prolonged exposure and / or physical activity.

NOTE: Degree of heat stress may vary with age, health and body characteristics.

NOTE: Employees/contractors must check on each other to help spot symptoms as employees/contractors normally do not recognize symptoms in/on themselves.

1.0 Roles and Responsibilities

1.1 Employee roles and responsibilities

1.1.1 Employees shall review the following roles and responsibilities:

- *Be familiar with applicable site hazards associated with working in hot environments;*
- *Understand the signs and symptoms of heat related stress;*
- *Ensure personal medications do not increase heat tolerance risk;*
- *Wear appropriate PPE;*
- *Notify their Supervisor if they become aware of factors or circumstances where they feel the measures taken to ensure their safety while exposed to excessive heat are inadequate;*
- *Follow working alone policy and communication checks*

1.2 Managers and Supervisors roles and responsibilities

1.2.1 Managers and Supervisors shall review the following roles and responsibilities:

- *Are knowledgeable about the hazards and standard approaches to work associated with specific hot environments under their authority;*
- *Ensure employees/contractors are familiar with heat related hazards, symptoms and controls*

1.3 Corporate Safety roles and responsibilities

1.3.1 Corporate Safety shall review the following roles and responsibilities:

- *Provide support in the implementation and use of this SOP;*
- *Monitor implementation and use of this SOP;*
- *Provide support in developing recommendations to reduce the risk of heat stress;*

1.4 Contractors responsibilities

1.4.1 Contractors shall

- *Meet or exceed the requirements of SaskPower Contractor Health and Safety Management System, SaskPower Safety Management System and follow applicable work practices in accordance with this SOP and facility/site requirements*

2.0 Preventive Measures

2.1 Preventive Measures and barrier controls

- #### 2.1.1
- SaskPower shall work to ensure that mechanisms are in place to identify, assess, control, and monitor potential heat stress situations. SaskPower shall implement a combination of the following barrier controls to reduce the risk and exposure to employees.

- **Engineering controls** - often can eliminate the hazard and should be considered first, with controls for reducing heat and humidity and cooling systems for indoor work locations cover or insulate hot surfaces shields for employees/contractors use mechanical aids to reduce physical exertion
- **Administrative controls** - training, work rescheduling, rotating work and pace of work acclimatize employees/contractors supervise employees/contractors or work in pairs or groups to ensure disorders are identified
- **PPE** - where engineering or administrative controls are not feasible or practicable, the use of PPE may be necessary. Equipment will be selected in accordance with all other applicable codes. Wear loose fitting clothing if possible. Some tasks require employees to wear protective clothing, face shields, goggles, gloves and boots to provide a barrier from the heat source. Insulated or cooled clothing such as cooling vest may be required for short term exposure work such as maintenance. Outdoor employees/contractors should be provided with protection against ultraviolet exposure, such as a wide brim hat, loose fitting, long sleeved collared shirt and long pants, sunglasses and sunscreen.
- **Personal controls** - Drink fluids continuously throughout the workday (do not wait until you are thirsty).

3.0 Heat Cramps

NOTE: Heat cramps are one of the earliest symptoms of the spectrum of heat related illness.

3.1 Signs and symptoms of heat cramps

3.1.1 Employees/contractors shall review the following to be aware of early signs and symptoms of heat cramps:

- *Usually occur during heavy exercise/work in hot environments*
- *Excessive sweating*
- *Painful Muscular pain, spasms and cramps most often in the calves, arms, abdomen and back, spasms may be more intense and prolonged than typical nocturnal leg cramps*
- *Inadequate fluid intake often contributes to problem*

3.2 Treatment

3.2.1 Employees/contractors shall review the following to be aware of the treatment required for heat cramps:

- *Move the employees/contractors to a cooler environment, lay the worker down and remove or loosen tight fitting clothing;*
- *Cool by sponging with cool water and fanning;*

- *If employees/contractors are fully alert and not nauseated, provide water, 2 teaspoon of salt in 1 litre of water is best, or commercial fluid electrolyte replacement beverage;*
- *Gentle massage and range of motion stretching of affected muscles may be effective*

4.0 Heat Exhaustion

NOTE: Is one part of the spectrum of heat related illnesses that begins with heat cramps.

4.1 Signs and symptoms of Heat Exhaustion

4.1.1 Employees/contractors shall review the following to be aware of early signs and symptoms of heat exhaustion:

- *Feeling faint, weakness, dizziness*
- *Pale, ashen appearance*
- *Hot, red, moist/clammy skin*
- *Very thirsty*
- *Panting or breathing rapidly, increased heartbeat*
- *Low blood pressure, weak and rapid pulse*
- *Vision may be blurred*
- *Heavy sweating*

4.2 Treatment of Heat Exhaustion

4.2.1 Employees/contractors shall review the following to be aware of the treatment for heat exhaustion:

- *GET MEDICAL ATTENTION- this condition can lead to heat stroke and death - monitor closely;*
- *Move the employees/contractors to a cooler environment, lay the employees/contractors down and elevate feet, remove or loosen tight fitting clothing;*
- *If employees/contractors are fully alert and not nauseated, provide cold (not iced) water, 2 teaspoon of salt in 1 litre of water is best, or commercial fluid electrolyte replacement beverage;*
- *Cool by sponging or spraying with cool water and fanning*

NOTE: In most cases, the patient's symptoms will improve dramatically within 30 minutes. Patients should still be transported to medical aid.

5.0 Heat Stroke

NOTE: Heat stroke is a form of hyperthermia in which the body temperature is elevated dramatically. It is a medical emergency if not promptly treated.

5.1 Signs and symptoms of Heat Stroke

5.1.1 Employees/contractors shall review the following to be aware of early signs and symptoms of heat stroke:

- *The main sign is elevated temp usually greater than 40c*
- *Hot, dry (absence of sweat), red flushed skin*
- *Change in mental status, confused, acting strangely*
- *Decreased level of consciousness, unconsciousness (this can be the very first sign for older adults)*
- *Nausea and vomiting*
- *Rapid shallow breathing and heartbeat*
- *Seizures*
- *Cardiac arrest*

5.2 Heat Stroke Treatment

5.2.1 Employees/contractors shall review the following to be aware of the treatment for heat stroke:

- *CALL AMBULANCE;*
- *Cooling the victim as quickly as possible is the number 1 priority;*
- *Move the worker to a cooler environment, (air-conditioned room), lay the worker down and remove or loosen tight fitting clothing;*
- *Spray or sponge entire body with cold water or cover with wet sheets, direct forceful fanning will aid;*
- *Offer sips of water if patient is conscious, 2 teaspoon of salt in 1 litre of water is best, or commercial fluid electrolyte replacement beverage;*
- *If unconscious, place them on their side or 3/4 prone position and monitor their breathing*

10.0 Acronyms, Definitions and Symbols

Acronyms and Abbreviations

N/A

Definitions

Humidex - Is a measure of how hot people feel in outdoor conditions. It is the combined effect of air temperature and relative humidity as a single number that is intended to reflect perceived heat.

Symbols

N/A



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11.0 Components

The following is a list of components for this SOP which can be accessed through the SOP System:

Component Name	Component Type	Component Description	Location of Component
Procedure for Working in Hot Conditions flowchart	Flowchart	High level flowchart for the procedure	SOP Online – SOP Bundle: Working in Hot Conditions

2.0 Owner

Owner

Sr. Director, Distribution Services Operations - Ted Elliott (TBD)

13.0 References

References	Location of Resource
<ul style="list-style-type: none">- SaskPower Safety Rulebook- Sask Occupational Health & Safety Acts and Regs	<ul style="list-style-type: none">- Safety Net- Sask Ministry of Labour Relations and Workplace Safety
<ul style="list-style-type: none">- Extreme Hot or Cold Temperature Conditions	<p>http://www.ccohs.ca/oshanswers/phys_agents/hot_cold.html</p>
<ul style="list-style-type: none">- SaskPower, Working in Hot and Cold Conditions Standard and Working in Hot Conditions	<ul style="list-style-type: none">- SafetyNet(Domino.Doc)
<ul style="list-style-type: none">- Preventing Heat Stress at Work	<ul style="list-style-type: none">- Work Safe BC