

## ***INTRODUCTION***

 Since 1936, according to the National Safety Council, 30,000 people have died from heat related illnesses.

 On the average, 384 people die each year from heat stroke.

This is an average number of deaths associated with normal hot temperatures. In the event of a heat wave, the number of deaths increase tremendously.

 Heat related injuries seem to occur often with the elderly; people who are not in good physical condition; or acclimatized to the heat.

## ***GENERATION OF BODY HEAT***

There are two main ways in which our bodies produce heat:



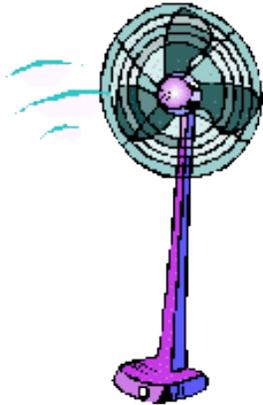
Metabolic Heat - the body generates heat through the digestion of food and exercise.



Environmental Heat - body absorbs heat from the surrounding environment, whether it is the hot sun or a hot room.

## ***THE BODY'S COOLING SYSTEM***

There are three methods in which our bodies can be cooled.



**Convection** - is the transfer of heat through the circulation of air.

**Radiation** - heat is naturally emitted from the body surface.

**Evaporation** - process which occurs when a liquid changes into a vapor.

## ***CONDITIONS AFFECTING THE COOLING SYSTEM***

- 🔥 **Acclimation** - the biological process through which our bodies adapt to the environment -- basically getting used to the heat.
  
- 🔥 **Air Temperature** - heat flows from warmer objects to cooler objects.
  
- 🔥 **Air Movement** - moving air speeds the evaporation process.
  
- 🔥 **Humidity** - the amount of water vapor in the air affects the rate of evaporation.
  
- 🔥 **Clothing** – the type of clothing affects the amount of heat our bodies absorb and retain.

## ***HEAT RELATED HEALTH PROBLEMS***

Read the following conditions so that you may be familiar with their symptoms in order to protect yourself and others in the event of a heat related emergency.

-  **Heat Rash** - also known as Prickly Heat, occurs in hot, humid environments where sweat can't easily evaporate from the skin. This condition produces a rash which in some cases causes severe pain. The procedures to prevent or minimize this condition is to rest frequently in cool places and bath regularly ensuring to thoroughly dry the skin.
  
-  **Heat Cramps** - painful muscle spasms that result from the loss of salt and electrolytes due to excessive sweating. The cramps will usually affect the stomach, the arms and legs. This condition can be treated by drinking fluids containing electrolytes such as calcium, sodium and potassium. This condition usually precedes heat exhaustion.
  
-  **Heat Exhaustion** - is a state brought on by the loss of fluids lost during excessive sweating. Individuals with heat exhaustion still sweat, but they experience extreme weakness and may even collapse. They may experience nausea and headache. Their skin is clammy and moist, their complexion is usually pale and the body temperature is usually normal or slightly higher. This condition is best treated by taking the patient to a cool place, applying cool compresses, elevating the feet and giving the individual plenty of fluids.
  
-  **Heat Stroke** - is a severe medical emergency which could result in death. Heat stroke results when the body's core temperature gets too high and the body is no longer able to cool itself. An individual suffering from heat stroke will have hot and dry skin, their pulse will be high and their blood pressure will fall. The person may have irrational behavior, may be in a state of confusion or may become comatose. The body core temperature may exceed 104 degrees F. If not treated promptly the core temperature will rise too high and death will follow. This condition must be treated by immediately cooling the victim's body with water or wrapping them in cool wet sheets. Immediately seek medical attention.

## ***PREVENTING HEAT-RELATED HEALTH PROBLEMS***

There are means to preventing heat emergencies. Familiarize yourself with the following procedures to ensure that you or those around you do not become a statistic to heat stress.

**Acclimation** - accustom yourself to the weather prior to long durations of physical activity.

**Maintain Body Fluids** - Fluid intake must be maintained throughout the course of physical activity. Do not rely on thirst as an indicator of dehydration because your body loses water faster than you realize. Alcohol should be avoided because it is a diuretic, which increases dehydration and can interfere with heat loss.

**Proper Diet** – Eat light and stay away from heavy foods. They increase metabolic heat production and also increase water loss. Eat smaller, well-balanced meals more often.

**Dress Light** – Lightweight, light-colored clothing reflects heat and sunlight and helps your body maintain normal temperatures. Wear loose-fitting clothes such as cotton which lets air move over your body. Wide brimmed hats should also be worn.

**Rest Periods** - Pace your work activities at a slower rate during high temperatures and take frequent rest periods in a shaded area and drink plenty of fluids.

**HOW HOT IS IT?** The following Heat Index Chart is for your information which shows how hot it really feels when the humidity is combined with the actual air temperature.

**HEAT INDEX CHART**

		RELATIVE HUMIDITY								
		10 %	20%	30%	40%	50%	60%	70%	80%	90%
TEMPERATURE F°	104°	98	104	110	120	>130	>130	>130	>130	>130
	102°	97	101	108	117	125	>130	>130	>130	>130
	100°	95	99	105	110	120	>130	>130	>130	>130
	98°	93	97	101	106	110	125	>130	>130	>130
	96°	91	95	98	104	108	120	128	>130	>130
	94°	89	93	95	100	105	111	122	128	>130
	92°	87	90	92	96	100	106	115	122	128
	90°	85	88	90	92	96	100	106	114	122
	88°	82	86	87	89	93	95	100	106	115
	86°	80	84	85	87	90	92	96	100	109
	84°	78	81	83	85	86	89	91	95	99
	82°	77	79	80	81	84	86	89	91	95
	80°	75	77	78	79	81	83	85	86	89
	78°	72	75	77	78	79	80	81	83	85
	76°	70	72	75	76	77	77	77	78	79
	74°	68	70	73	74	75	75	75	76	77

Directions: Locate the current temperature on the left column and then locate the relative humidity on the top row. Follow the temperature across and the humidity down until they meet; this measurement is the heat index. The heat index will increase 15 degrees in direct sunlight.

DANGER CATEGORY	HEAT SYNDROME	TAMUK PROCEDURES
<b>EXTREME DANGER</b>	Heatstroke Imminent	When the Heat Index is in this zone, the President will dismiss the personnel in the affected areas.
<b>DANGER</b>	Heat cramps , or heat exhaustion likely. Heatstroke possible with prolonged exposure and activity.	When the Heat Index is in this zone, the appropriate A.V.P. will discuss the condition with departmental supervisors and make schedule adjustments or temporarily relocate the affected employees. The appropriate Vice President must approve personnel working under a Danger condition.
<b>EXTREME CAUTION</b>		
<b>CAUTION</b>	Heat cramps , or heat exhaustion possible with prolonged exposure and activity.	When the Heat Index is in this zone, the departmental supervisor will discuss the condition with departmental personnel and make schedule adjustments to accommodate for the heat . The Dean or appropriate A.V.P. must approve personnel working under an Extreme Caution condition.
	Fatigue possible.	
		Normal work day. No alerts posted.