

## Heat Stress

The following guidance is not a fine line between safe and dangerous levels of heat exposure. Professional judgment and a program of heat stress management are required to ensure adequate protection for each situation.

Screening Criteria for Heat Stress Exposure (WBGT values).

Work Demands	Acclimatized				Unacclimatized			
	Light	Moderate	Heavy	Very Heavy	Light	Moderate	Heavy	Very Heavy
100% Work	85° F	81.5° F	79° F		81.5° F	77° F	72.5° F	
75% Work	87° F	83° F	81.5° F		84° F	80° F	76° F	
50% Work; 50% Rest	89° F	85° F	83° F	81.5° F	86° F	82° F	80° F	77° F
25% Work; 75% Rest	90.5° F	88° F	86° F	85° F	88° F	84° F	82° F	80° F

\*The above table applies to workers wearing a traditional work uniform of long-sleeved shirt and pants. For personnel working in cloth overalls, add 2° F to the measured/reported WBGT. For personnel working in double-cloth overalls, add 3° F to the reported WBGT. For other clothing combinations, or if you have questions related to heat stress in general, contact Bioenvironmental Engineering at 7-7555.

## Acclimitization

With a recent history of heat-stress exposures (ex. 5 of the last 7 days), a worker can be considered acclimatized for the purpose of using the table above. Full-heat acclimatization requires up to 3 weeks of continued physical activity under heat-stress conditions similar to those anticipated for the work. Its loss begins when the activity under heat-stress conditions is discontinued, and a noticeable loss occurs after 4 days.

## Water Intake

Drink small volumes (approximately 1 cup) of cool water about every 20 minutes.

## Examples of Activities within Metabolic Rate Categories

Categories	Example Activities
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<b>Light</b>	<ul style="list-style-type: none"> <li>• Sitting with moderate arm and leg movements</li> <li>• Standing with light work at machine or bench while using mostly arms</li> <li>• Using a table saw</li> </ul>
<b>Moderate</b>	<ul style="list-style-type: none"> <li>• Standing with light or moderate work at machine or bench and some walking about</li> <li>• Scrubbing in a standing position</li> <li>• Walking about with moderate lifting or pushing</li> <li>• Walking on a level surface at 4 mi/hr while carrying 7lb weight load</li> </ul>
<b>Heavy</b>	<ul style="list-style-type: none"> <li>• Carpenter sawing by hand</li> <li>• Shoveling dry sand</li> <li>• Heavy assembly work on a noncontinuous basis</li> <li>• Intermittent heavy liftingg with pushing or pulling (Ex. pick &amp; shovel work)</li> </ul>
<b>Very Heavy</b>	<ul style="list-style-type: none"> <li>• Shoveling wet sand</li> </ul>

*(The above information is taken from the 2000 ACGIH, TLVs and BEIs)*

Heat-Related Disorders Including the Symptoms, Signs, Causes, and Steps for First Aid and Prevention (Fundamentals of Industrial Hygiene, 4th edition, National Safety Council, 1996)

<b>Disorder</b>	<b>Symptoms</b>	<b>Signs</b>	<b>Cause</b>	<b>First Aid</b>	<b>Prevention</b>
<b>Heat syncope</b>	Blurred vision Fainting Normal temp	Brief fainting or near-fainting behavior	Pooling of blood in the legs and skin from prolonged static posture and heat exposure	Lie on back in cool environment. Drink water.	Flex leg muscles several times before moving. Stand or sit up slowly.
<b>Heat Exhaustion</b>	Fatigue Weakness, Blurred vision, Dizziness, Headache	High Pulse rate, Profuse sweating, Low blood pressure, Insecure gait, Pale face, Collapse, Body temp: normal to	Dehydration (caused by sweating, diarrhea, vomiting), Distribution of blood to the	Lie down flat on back in cool environment, Drink water, Loosen clothing	Drink water or other fluids frequently., Add salt to food., Acclimation

		slightly increased	periphery, Low level of acclimation, Low level of fitness		
<b>Heat Stroke</b>	Chills, Restlessness, Irritability	Euphoria, Red face, Disorientation, Hot, dry skin, Erratic behavior, Collapse, Shivering, Unconsciousness, Convulsions, Body temp > 104° F	Excessive exposure, Subnormal tolerance, Drug/alcohol abuse	Immediate, aggressive, effective cooling., Transport to hospital., Take body temperature.	Self determination of heat stress exposure., Maintain a healthy life-style., Acclimation.

**\*NOTE:** Salting foods is encouraged as both treatment and prevention of some heat-related disorders. Workers on salt-restricted diets must consult their personal physicians.