

ENVIRONMENTAL HEALTH & SAFETY  
THE UNIVERSITY OF TEXAS AT TYLER



HEAT STRESS  
PREVENTION PROGRAM

2023

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## 1. INTRODUCTION

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 engaged in such operations. Outdoor operations conducted in hot weather are also likely to cause heat stress among exposed workers. The University of Texas at Tyler has developed a Heat Stress Prevention Program to prevent potential heat related injuries to its employees while performing routine tasks or work.

## 2. PURPOSE

This program is designed to establish acceptable practices and guidelines designed to prevent heat-related disorders, such as; heatstroke, heat syncope, heat exhaustion and heat cramps amongst University employees.

## 3. DEFINITIONS

- **Heat stroke** is the most serious form of heat-related illness, happens when the body becomes unable to regulate its core temperature. Sweating stops and the body can no longer rid itself of excess heat. Signs include confusion, loss of consciousness, and seizures. **Heat stroke is a medical emergency that may result in death.**
- **Heat exhaustion** is the body's response to loss of water and salt from heavy sweating. Signs include headache, nausea, dizziness, weakness, irritability, thirst, and heavy sweating.
- **Heat cramps** are caused by the loss of body salts and fluid during sweating. Low salt levels in muscles cause painful cramps. Tired muscles (those used for performing the work) are usually the ones most affected by cramps. Cramps may occur during or after working hours.
- **Heat rash**, also known as prickly heat, is skin irritation caused by sweat that does not evaporate from the skin. Heat rash is the most common problem in hot work environments.
- **Heat syncope** is fainting or dizziness as a result of overheating (*syncope* is the medical term for fainting). The basic symptom of heat syncope is fainting, with or without mental confusion. Heat syncope is caused by peripheral vessel dilation, resulting in diminished blood flow to the heart and dehydration.

## 4. PROGRAM REQUIREMENTS

### Heat Stress Prevention

Heat stress can be induced by high temperatures, heavy workloads, the type of clothing being worn, etc. The goal of a heat program is to keep the deep body

temperature below 100.4 degrees °F. Methods to prevent heat stress can include but are not limited to the following measures:

- Provide periodic rest breaks
- Schedule physically demanding activities for cooler parts of the day
- Provide frequent breaks and encourage fluid intake
- Increase air velocity (only effective if air temperature is below 95 degrees F)
- Monitor humidity levels in work area (refer to the Heat Stress Index Chart)
- Use mechanical aids to perform work instead of relying on physical effort
- Rotate workers
- Allow workers to acclimatize to the weather conditions
- Screen workers to identify employees with higher heat-tolerance
- Shield and insulate employees
- Train supervisors on heat stress prevention and how to identify symptoms
- Proper application of personal protective equipment

### **Heat Stress Treatment**

Heat stress includes a series of conditions where the body is under stress from overheating. Supervisors should be familiar with the signs and symptoms of these conditions which are provided in the Heat Conditions Table (see Appendix B). They should also be prepared to implement the first aid measures identified in the table to treat employees.

### **At-Risk Employees**

Some employees are more likely to have heat disorders than others. Younger employees and those more physically fit are often less likely to have problems. Employees with heart, lung or kidney disease, diabetes and those on medications are more likely to experience heat stress problems. Diet pills, sedatives, tranquilizers, caffeinated drinks and excessive alcohol consumption can all exacerbate heat stress effects.

It often takes two to three weeks for employees to become acclimated to a hot environment. This acclimation can subsequently be lost in only a few days away from the heat. Thus, employees should be more cautious about heat stress after coming back from a vacation, when beginning a new job, or after the season's first heat wave. In short, precautions should be taken anytime there are elevated temperatures (approaching 90 degrees F) and the job is physically demanding.

### **Other Factors**

Other heat stress factors are also very important. In addition to temperature, increased relative humidity, decreased air movement or lack of shading from direct heat (radiant temperature) will all affect the potential for heat stress.

## 5. PROGRAM RESPONSIBILITIES

All departments and supervisors are responsible for implementing this program to adequately protect employees from potential heat stress and related injuries.

Role	Responsible for
<b>President and Vice President(s)</b>	Issue Heat Stroke Alert as indicated in Heat Stress Index Chart (See Appendix A) as well as determine what activities can be performed during a Danger period
<b>Departments</b>	Ensure employees who are working in hot environments take necessary precautions as outlined in the Heat Conditions Table (See Appendix B)
<b>Supervisors</b>	<p>Annually train employees who work in high heat areas. Monitor signs and symptoms of heat stress in workers and ensure the guidelines in this policy are followed. Also do the following:</p> <ul style="list-style-type: none"> <li>• Allow employees to acclimate; 2-3 weeks</li> <li>• Adjust work schedule; heavier work during cooler hours</li> <li>• Reduce physical labor; employ machinery/equipment</li> <li>• Establish work/rest schedules</li> <li>• Review heat stress signs/symptoms with employees</li> <li>• Avoid placing At-Risk workers in high heat for long times</li> </ul>
<b>Employees</b>	<p>Attending training and following the instructions given. They are also responsible for monitoring themselves for signs and symptoms of heat stress as outlined in the Heat Conditions Table (See Appendix B). Also do the following:</p> <ul style="list-style-type: none"> <li>• Drink plenty of water – BEFORE you are thirsty</li> <li>• Wear a hat and light colored, loose fitting clothing</li> <li>• Pace the work – take frequent breaks</li> </ul>

# APPENDIX A

## HEAT STRESS INDEX CHART

		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.

\*Information from National Weather Service, USAF, Texas A&M University

**Extreme Danger: Heat Stroke likely to occur when working under these conditions. President (or designee) will issue Heat Stroke Alert requiring UT Tyler employees to be removed from such an environment.**

**Danger: Heat Exhaustion or Heat Cramps likely. Heat Stroke may occur upon prolonged exertion. Appropriate Vice President will approve any employees who are requested to continue working in such an environment.**

**Extreme Caution: Heat Cramps or Heat Exhaustion likely to occur. Supervisors should implement adjusted schedules and procedures.**

**Caution: Heat Fatigue may occur. Normal summer working conditions should be observed.**

# APPENDIX B

## HEAT CONDITIONS TABLE

Condition	Signs/Symptoms	First Aid
<i>Heat Cramps</i>	Painful muscle spasms Pain usually in abdomen, arms, or legs	Rest in to shady, cool area Increase water intake Wait a few hours to resume work
<i>Heat Syncope</i>	Brief fainting Light-headed, dizziness Headache Nausea, vomiting Increased pulse	Rest in shady, cool area Increase water intake, slowly Refrain from vigorous activity
<i>Dehydration</i>	Fatigue Reduced movement	Rest in shady, cool area Increase water intake
<i>Heat Exhaustion</i>	Cool, moist skin Heavy sweating Headache Nausea, vomiting Light-headed, dizziness Weakness, fatigue Thirst Irritability Fast heartbeat	Rest in shady, cool area Increase water intake Loosen clothing Cool with cold compresses/ ice packs  Take to Clinic or Emergency Room if symptoms worsen or do not improve within 60 minutes
<i>Heat Stroke</i>	Confusion or erratic behavior Fainting Seizures Excessive sweating or red, hot, dry skin Very high body temperature	<b>Medical Emergency!</b> Call 911 to summon ambulance  Move to shady, cool area Loosen clothing Fan air on, cold pack armpits Wet with cool water Provide fluids, preferably water Stay with victim until help arrives

## 6. REVISIONS

<b>Date</b>	<b>Author/Reviewer</b>	<b>Description/Reason for Change</b>
2/16/2022	T Bay/ P Tate	New Program
7/7/2023	T Bay/ K Stapp	Reviewed, update logo, date & formatting