

## DESCRIPTION

Heat related illnesses occur when the body is not able to lose enough heat to balance the heat generated by physical work and the external heat sources. Weather conditions are the primary external heat sources for outdoor workers. It is also important to consider that hot work environments may exist indoors. Heat-related illness can often be prevented by education, assessment of conditions, proper acclimatization, implementation of safe work practices and use of supervision and/or the buddy system to monitor the condition of employees



## HEAT ILLNESS PREVENTION AT PENN

Penn’s Environmental Health and Radiation Safety Office (EHRS) maintains the University’s [Heat Illness Prevention Program](#). The program defines roles, responsibilities, and procedures to prevent personnel from exposure to heat illness.

## RISK FACTORS FOR HEAT ILLNESS

- Obesity
- Diabetes
- High blood pressure
- Heart disease
- Lower level of physical fitness
- Certain medications (diuretics, psychiatric medications, blood pressure medications)
- Use of illicit drugs

## SYMPTOMS AND FIRST AID

HEAT ILLNESS	SYMPTOMS	TREATMENT
Heat stroke	<ul style="list-style-type: none"> <li>• High body temperature (103 F or higher)</li> <li>• Hot, red, dry skin or profuse sweating</li> <li>• Fast, strong pulse</li> <li>• Throbbing Headache</li> <li>• Dizziness/Fainting</li> <li>• Nausea</li> </ul>	<p><b>Call 511 or 215-573-3333 on campus or 911 off campus</b> to transport the victim to a hospital immediately. Heat stroke is a severe medical emergency. Delay can be fatal. Move victim to Air-conditioned area if possible and lower body temperature as quickly as possible with icy cool cloths or bath.</p>
Heat exhaustion	<ul style="list-style-type: none"> <li>• Heavy sweating</li> <li>• Thirst</li> <li>• Cold, pale, and clammy skin</li> <li>• Rapid, weak pulse</li> <li>• Nausea or vomiting</li> <li>• Muscle cramps</li> <li>• Dizziness/light headedness</li> <li>• Headache</li> </ul>	<p>Move victim to cooler area and loosen clothing. Apply wet cloths or have a person sit in cool bath and offer sips of water. Seek medical attention if symptoms don’t improve or last longer than 1 hour.</p>

## HEAT INDEX

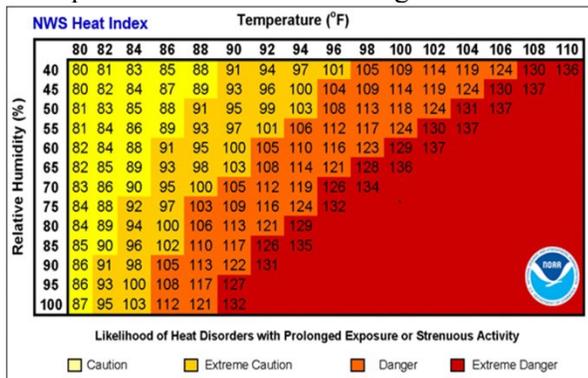
Heat index is an index that combines the temperature and relative humidity to more accurately describe how conditions feel to the human body. Heat index values inform risk levels:

- < 91°-----Lower Risk Level (Use caution)
- 91-103°----Moderate Risk Level
- 103-115°--High Risk Level
- 115°-----Very High to Extreme Risk Level

## HEAT ASSESSMENT METHODS

Wet Bulb Globe Temperature (WBGT): Most accurate method. EHRS can complete a WBGT study by request.

NOAA Heat Index Chart: Heat index can be calculated by using relative humidity and temperature. Chart values assume shade conditions. Add up 13.5° when in direct sunlight.



## SAFE WORK PRACTICES

### Heat Acclimatization

New and returning workers need to build a tolerance to heat and take frequent breaks. New workers should only work 20% of their normal shift duration in hot conditions. Increase work duration in the hot environment by 20 percent each day until performing the normal schedule.

### Clothing

Dress for the heat. Loose-fitting, light-colored clothing is recommended when working in hot conditions.

### Water, Rest, Shade

Fully shaded or air-conditioned areas should be available for rest and breaks in hot conditions.

Workers are encouraged to drink 1 liter of water every hour and avoid any drinks with caffeine or alcohol.

### Engineering Controls

If possible, implement cooling fans, misting fans, insulation on hot services, and mechanical equipment to reduce manual work. Ex. (Riding vs Walking Mower)



## RESOURCES

**Penn EHRS- Heat Illness Prevention Program.**  
<https://ehrs.upenn.edu/health-safety/general-health/heat-illness-prevention>

### OSHA Heat illness Information

<https://www.osha.gov/heat> Includes heat illness general education, employer responsibilities and information for workers. Includes helpful posters in English and Spanish.

### NIOSH Heat Index App:

Provides instant information on current conditions, hour by hour forecast, and symptoms/first aid information.



**Get App**



**Centers for Disease Control and Prevention (CDC) and National Institute for Occupational Safety and Health (NIOSH) Heat Stress Resources:**

<https://www.cdc.gov/niosh/topics/heatstress/default.html>