



# UCSD HEAT ILLNESS PREVENTION PROGRAM

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This program manual is intended for all outdoor places of employment covered under the Cal/OSHA Title 8, §3395 Heat Illness Prevention Standard

UCSD Environment, Health, and Safety  
[ehsih@ucsd.edu](mailto:ehsih@ucsd.edu)

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## INTRODUCTION

### APPLICABILITY

This Heat Illness Prevention Program Manual was created by UCSD Environment, Health, and Safety (EH&S) to comply with the California Occupational Safety and Health Administration (Cal/OSHA) Heat Illness Prevention Standard: Title 8, California Code of Regulations (CCR), Section 3395. This standard is applicable to all outdoor places of employment whenever risk factors for heat illness are present.

### RESPONSIBILITIES

#### *Department Directors, Chairs, or Deans*

- Ensure departmental compliance with campus program policies and procedures.
- Ensure written policies and procedures are made available to employees.
- Identify supervisors and ensure they are trained on their responsibilities.
- Provide necessary resources to ensure the health and safety of employees.

#### *Managers/Supervisors*

- Understand and implement written campus program policies and procedures.
- Ensure all employees have completed documented Heat Illness Prevention training.
- Establish written heat illness prevention plans for each outdoor worksite.
- Ensure adequate water, shade, and shift breaks at each outdoor worksite.
- Monitor weather reports and implement proper high-heat procedures.
- Establish site-specific emergency procedures.

#### *Employees*

- Understand and comply with the campus program policies and procedures.
- Notify supervisor of any hazardous conditions observed on the worksite.
- Inform supervisor of any factors that may increase risk of heat illness.
- Report any signs or symptoms of heat illness to supervisor.

#### *Environment, Health, and Safety (EH&S)*

- Interpret Cal/OSHA Heat Illness Prevention regulations as it relates to UCSD operations.
- Develop written program policy to comply with Heat Illness Prevention standard.
- Perform annual review of program document and update as needed.
- Provide support to applicable departments and employees.

## BACKGROUND

### DEFINITION

Heat Illness is a medical condition which results from the body's inability to cope with a particular heat load. Heat illness symptoms may progress quickly from mild symptoms to a serious life-threatening illness.

### PERSONAL RISK FACTORS

Personal risk factors increase an individual's susceptibility to developing heat illness. Some personal risk factors include:

#### *General Health and Age*

Older individuals are at greater risk of developing heat illness. Certain health conditions can also increase the risk of heat illness such as poor physical fitness, fever, pre-existing medical conditions, and use of some prescription medicines. Individuals with a prior history of heat related illness are more likely to develop heat illness.

\*Employees who are concerned with their ability to work in the heat should report to their supervisor and consult with the UCSD Center of Occupational & Environmental Medicine (COEM) Occupational Health Nurse.

#### *Dehydration*

In warm or hot conditions, drinking enough water is vital for maintaining a normal body temperature. Certain foods and beverages, such as alcohol and caffeinated beverages, can cause dehydration, further increasing the risk for heat illness.

#### *Degree of Acclimatization*

Acclimatization is the temporary adaptation of the body to work in the heat. This adaptation occurs gradually as a person is exposed to high temperatures. Employees who were previously acclimatized can still be susceptible to developing heat illness and may need further acclimatization when workplace conditions change. Such changes include:

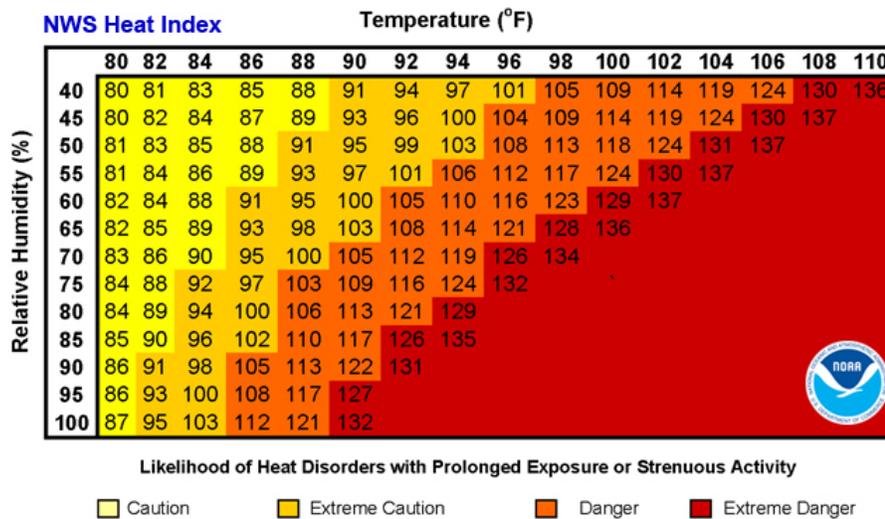
- Employees returning to work after a long absence
- Sudden change in work location to hotter temperature
- More physically demanding work tasks
- Use of some personal protective equipment (PPE)

## ENVIRONMENTAL RISK FACTORS

Environmental risk factors are working conditions that can increase the external heat burden on the body and create the possibility that heat illness could occur. Some environmental risk factors include:

### *Temperature and Relative Humidity*

The Heat Index, established by the National Weather Service (NWS), shows how air temperature and relative humidity can increase the risk of developing heat illness. The Heat Index is the temperature the body feels when air temperature and relative humidity are combined. The Heat Index chart below is based upon shaded conditions with light winds. Exposure to full sunshine can increase the Heat Index by up to 15°F. Strong winds with very hot, dry air, can also increase the Heat Index.



### *Radiant and Conductive Heat*

Radiant heat from direct sun exposure or reflective surfaces, along with conductive heat from close proximity to hot objects or equipment can increase risk of heat illness. This combined with poor air movement or limited circulation can prevent cooling and contribute to the overall heat burden.

### *Clothing and Personal Protective Equipment (PPE)*

PPE which covers the body or face, limits air movement and the cooling effects of sweating. Inappropriate work clothing such as dark colored or tight-fitting clothing should be avoided.

### *Physical Exertion*

Strenuous work activity and long duration can contribute to the over heat load on the body. Not enough rest breaks, and repeated days in the heat also can increase the risk of heat illness.

## TYPES OF HEAT ILLNESS

Supervisors and employees are responsible for understanding the signs and symptoms of heat illness and proper first aid procedures. All signs and symptoms of heat illness must be reported to a supervisor immediately.

	Symptoms	First Aid / Treatment
<b>Heat rash</b>	<ul style="list-style-type: none"> <li>• Clusters of red bumps on skin (usually on neck, upper arms, folds of skin)</li> </ul>	<ul style="list-style-type: none"> <li>• Keep affected area dry</li> <li>• Apply powder if necessary to absorb moisture and avoid using creams</li> <li>• Try to work in a cooler, less humid environment when possible</li> </ul>
<b>Heat cramps</b>	<ul style="list-style-type: none"> <li>• Painful muscle spasms (usually in abdomen, legs, arms)</li> </ul>	<ul style="list-style-type: none"> <li>• Rest in cool, shady area</li> <li>• Drink water or other cool beverages</li> <li>• Wait a few hours before returning to strenuous activity</li> <li>• Seek medical attention if cramps worsen or do not go away</li> </ul>
<b>Heat syncope</b>	<ul style="list-style-type: none"> <li>• Dizziness</li> <li>• Fainting (short duration)</li> <li>• Light-headedness during prolonged standing or sudden standing from a sitting or lying position</li> </ul>	<ul style="list-style-type: none"> <li>• Rest in a cool, shady area</li> <li>• Drink water or other cool beverages</li> <li>• Wait a few hours before returning to strenuous activity</li> </ul>
<b>Heat exhaustion</b>	<ul style="list-style-type: none"> <li>• Headache</li> <li>• Dizziness</li> <li>• Cool, moist skin</li> <li>• Heavy sweating</li> <li>• Nausea or vomiting</li> <li>• Light-headedness</li> <li>• Weakness</li> <li>• Rapid heart beat</li> </ul>	<ul style="list-style-type: none"> <li>• Rest in cool, shady area</li> <li>• Drink water or other cool beverages</li> <li>• Use methods of cooling to reduce body temperature such as fans, cold compresses, and wetting clothes</li> <li>• Take to clinic or emergency room for medical evaluation or treatment if symptoms do not improve within 60-minutes</li> <li>• Do not return to work that day</li> </ul>
<b>Heat stroke</b>	<ul style="list-style-type: none"> <li>• Confusion</li> <li>• Disorientation</li> <li>• Staggering</li> <li>• Irrational behavior</li> <li>• Fainting</li> <li>• Slurred speech</li> <li>• Very high body temperature</li> <li>• Red, hot, dry skin</li> <li>• Seizures</li> <li>• Rapid heart beat</li> </ul>	<ul style="list-style-type: none"> <li>• This is a medical emergency. Contact emergency medical services by dialing 9-1-1 or campus police at 858-534-HELP (4357)</li> <li>• If possible, move the worker to a shady, cool area</li> <li>• Use methods of cooling to reduce body temperature such as fans, cold compresses, and wetting clothes</li> <li>• Stay with the worker while waiting for emergency medical services</li> </ul>

## WORK SITE REQUIREMENTS

These requirements must be implemented by the supervisor or work shift designee unless otherwise stated. All components must be documented within the worksite Heat Illness Prevention Plan and communicated with employees.

## MONITORING THE WEATHER

- Review the forecasted temperature and humidity for the worksite and compare it to the NWS Heat Index to evaluate the risk level for heat illness.
- Ensure proper shade provisions are implemented when temperature reaches 80°F or above.
- Ensure proper “high-heat” procedures are implemented when temperature reaches 95°F or above.
- Ensure proper acclimatization procedures are implemented when there is a forecasted “heat-wave”.

## ACCLIMATIZATION

- Depending on the environmental and personal risk factors present, allow for proper acclimatization by adjusting work schedule, duration, and intensity.
- Gradually increase duration and intensity of work during the acclimatization period. Acclimatization typically peaks in most individuals within 4-14 days of regular work following at least 2-hours per day in the heat. Employees should be closely monitored during this process.
- When possible, schedule strenuous work activity during the cooler hours of the day and postpone work until the temperature decreases.

## WATER PROVISIONS

- Provide potable drinking water which is fresh, pure, and suitably cool, to employees free of charge. Drinking water must meet the requirements of CCR Title 8, Sections 1524, 3363, and 3457.
- Provide sufficient quantities of drinking water at the beginning of the work shift. There should be enough water to provide a minimum of 1 quart per employee per hour for the entire shift. If there are effective procedures for replenishing water during the shift, a minimum of 2 quarts per employee at the beginning of the shift may be acceptable.
- Encourage employees to frequently consume water during hot weather activities.

## ACCESS TO SHADE

- When temperature exceeds 80°F, provide shade that is either open to the air or provided with ventilation and cooling.
- Shade must accommodate the number of employees during recovery, rest, and meal periods so that they can sit in a normal posture fully in the shade without being in physical contact with one another.
- Shade must be located as close as practicable to the areas where employees are working.
- When temperatures do not exceed 80°F, shade shall still be provided with conditions above upon an employee's request

## EMPLOYEE MONITORING

- Effective communication must be maintained throughout the work shift so that employees at the work site can contact a supervisor or emergency medical services when necessary. An electronic device, such as a cell phone or text messaging device, may be used for this purpose only if reception in the area is reliable. If an electronic device will not furnish reliable communication, alternate means of summoning medical services is necessary.
- Employees newly assigned to a high-heat area (95°F and above), must be closely observed for the first 14-days of the employee's employment.
- Employees must be closely observed throughout the work shift during a "heat wave". For purposes of this section only, a heat wave means any day in which the predicted high temperature for the day will be at least 80°F and at least 10°F higher than the average daily temperature in the preceding five days.

## REST BREAKS

- Employees are allowed and encouraged to take preventative cool-down rest breaks in the shade when necessary to prevent overheating.
- Employees taking cool-down rest breaks shall be monitored for signs of heat illness and shall be encouraged to remain in the shade until signs and symptoms have abated.
- Cool-down rest breaks should be a minimum 5-minutes long in addition to the time needed to access shade.
- If employees exhibit signs or reports symptoms of heat illness while taking preventative cool-down rest or during preventative cool down rest period, appropriate first aid or emergency response must be administered.

## EMERGENCY RESPONSE

As part of the written Heat Illness Prevention Plan, departments and supervisors shall develop and implement effective worksite emergency response procedures. Emergency response procedures must state:

- Who will be responsible for ensuring emergency procedures are invoked when appropriate. Allow for other employees to call for emergency services when the designated employee is unavailable.
- How effective communication will be maintained so that employees at the work site can contact a supervisor or emergency medical services when necessary.
- How to respond to signs and symptoms of possible heat illness, including but not limited to first aid measures and how emergency medical services will be provided.
- How to contact emergency medical services in the event of an emergency and how to provide clear and precise directions to the work site as needed to emergency responders.

Employees experiencing any heat illness symptoms shall be monitored and shall not be sent home without being offered onsite first aid and/or being provided with emergency medical services. If there are signs or symptoms of **severe heat illness**, the following emergency response procedures must be implemented:

1. Contact emergency medical services. Campus employees may dial 9-1-1 or campus police dispatch at 858-534-HELP (4357).
2. Tell the dispatcher this is a heat related illness and provide clear and precise directions to the work site.
3. Administer appropriate first aid until medical responders arrive.
4. Notify your supervisor and report the incident by calling UCSD Worker's Compensation at (858) 534-3454.

## HIGH HEAT PROCEDURES

High-heat procedures are only required for workers who perform jobs in the industries listed below. However, it is strongly recommended that similar procedures be implemented for non-required industries to reduce the risk of heat related illness whenever possible.

- Agriculture
- Construction
- Landscaping (except for employment by an employer who operates a fixed establishment where the work is to be performed and where drinking water is plumbed)
- Oil and gas extraction
- Transportation (except for employment that consists of operating an air-conditioned vehicle and does not include loading and unloading).

For the industries listed above, proper high-heat procedures must be implemented when temperature equals 95°F or greater:

- Conduct pre-shift meeting with staff to (1) review written Heat Illness Prevention Plan, (2) encourage employees to drink plenty of water, and (3) remind employees of their right to take a cool-down rest break when necessary.
- Maintain effective communication and observe employees for alertness and signs of heat illness. This can be accomplished by implementing one or more of the following:
  - Mandatory buddy system
  - Supervisor observation (minimum 1 supervisor per 20 employees)
  - Regular communication with one employee by radio or cell phone
  - Other effective means of communication
- Designate one or more employees on each worksite authorized to call for emergency medical services and allow for other employees to call for emergency services when the designated employee is unavailable.
- For employees employed in agriculture, ensure employees take a minimum 10-minute preventative cool-down rest period every 2-hours.

## TRAINING REQUIREMENTS

Effective training in the following topics shall be provided to each supervisory and non-supervisory employee before the employee begins work that should reasonably be anticipated to result in exposure to the risk of heat illness:

- Procedures for complying with the requirements of this standard
- Environmental and personal risk factors for heat illness.
- The concept, importance, and methods of acclimatization.
- Understanding that heat illness may progress quickly from mild symptoms to a serious life-threatening illness.
- Recognizing different types of heat illness and how to administer appropriate first aid and/or emergency response.
- Importance of frequent consumption of water when work environment is hot.
- Importance of immediately reporting signs and symptoms in self or co-workers to supervisor.

In addition to training topics above, **supervisors** must also be trained on:

- Procedures for implementing the requirements of this standard.
- Procedures to follow when employee exhibits signs or reports symptoms consistent with possible heat illness, including emergency response procedures.
- How to monitor weather reports and how to respond to hot weather advisories.

## REFERENCES AND RESOURCES

Cal/OSHA Heat Illness Prevention Standard (CCR, Title 8, Section 3395)

<https://www.dir.ca.gov/title8/3395.html>

Cal/OSHA Heat-Related Illness Prevention and Information

<https://www.dir.ca.gov/dosh/heatillnessinfo.html>