Heat Illness Prevention

Summary: This section outlines the policy and procedures related to Heat Illness Prevention that are administered through the Environmental Health & Safety (EH&S) Department.

1. Program Description

The purpose of this program is to ensure that all UC Irvine employees, working in outdoor places of employment or in other areas where environmental risk factors for heat illness are present, are protected from heat illness and are knowledgeable of heat illness symptoms, methods to prevent illness, and procedures to follow if symptoms occur.

2. Scope

The Heat Illness Prevention Program applies to all University employees that may be at risk of heat illness and applies to all indoor and outdoor places of employment where environmental risk factors for heat illness are present.

3. Definitions

**Acclimatization** – The temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.

**Heat Illness** – A serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.

**Environmental risk factors for heat illness** – Working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.

**Landscaping** – providing landscape care and maintenance services and/or installing trees, shrubs, plants, lawns, or gardens or providing these services in conjunction with the design of landscape plans and/or the construction (i.e. installation) of walkways, retaining walls, decks, fences, ponds, and similar structures, except for employment by an employer who operates a fixed establishment where the work is to be performed and where drinking water is plumbed.
**Personal risk factors for heat illness** – Factors such as an individual’s age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affects the body’s water retention or other physiological responses to heat.

**Preventative recovery period** – A period of time, at least five minutes, used to recover from the heat in order to prevent further heat illness.

**Shade** – Blockage of direct sunlight. Canopies, umbrellas and other temporary structures or devices may be used to provide shade. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning. Shade may be provided by any natural or artificial means that does not expose employees to unsafe or unhealthy conditions and that does not deter or discourage access or use.

**Temperature** – The dry bulb temperature in degrees Fahrenheit obtainable by using a thermometer to measure the outdoor temperature in an area where there is no shade. While the temperature measurement must be taken in an area with full sunlight, the bulb or sensor of the thermometer should be shielded while taking the measurement, e.g. with the hand or some other object, from direct contact by sunlight.

### 4. Responsibilities

**Employees**
- Awareness and compliance with all appropriate heat illness prevention procedures while performing assigned duties
- Employees are ultimately responsible for drinking adequate amounts of hydrating fluids when the environmental risk factors for heat illness are present
- Ensure access to a shaded area is available to recover from heat related symptoms
- Inform their supervisor if shade and/or water is inadequate
- Report symptoms of heat related illness promptly to their supervisor
- Call 911 to request emergency medical services in the event medical assistance is required

**Supervisors**
- Identify and maintain records of all tasks/employees that are required to work outdoors where potential heat illness could occur
- Require all affected employees receive proper training on heat illness prevention and comply with all appropriate procedures
- Ensure that adequate water and shade are available at the job site when the environmental risk factors for heat illness are present
- Encourage employees to drink water frequently
- Call 911 to request emergency medical services in the event medical assistance is required

**Environmental Health and Safety (EH&S)**
- Establish and update the written Heat Illness Prevention Program
- Provide consultation/training to departments who fall within the scope of the program
• Assist departments in determining when, where, and how water and shade is provided

5. Program Components

Activation of Heat Illness Prevention Procedures
EH&S monitors the weather conditions and will notify the stakeholders/campus partners through a “Heat Advisory” notification when elements of this program must be activated. Appendix A contains an example of the “Heat Advisory” notification.

The Heat Advisory notification provides a link to the “Work Planning and Site Checklist” which will serve as the required documentation for regulatory compliance. Appendix B contains the “UC Irvine Heat Illness Prevention Program Work Planning and Site Checklist”.

The elements of the University’s program for heat illness prevention are detailed as follows:

Provision of Water
Whenever environmental risk factors for heat illness exist, supervisors are responsible to ensure that clean, fresh, and cool potable water is readily available to employees free of charge.

Where unlimited drinking water is not immediately available from a plumbed system, supervisors must provide enough water for every employee to be able to drink at least one quart of water per hour for the entire shift (at least 2 gallons per employee for an 8-hour shift). Smaller quantities of water may be provided at the beginning of the shift if there are effective procedures for replenishing the water supply during the shift as needed. Water must be located as close as practicable to the area(s) where employees are working.

The Cal/OSHA standard requires not only that water be provided, but that supervisors encourage employees to drink frequently. Employees must understand that thirst is not an effective indicator of a persons need for water and it is recommended that individuals drink one quart of water, or four 8-ounce cups, per hour when working in hot environments.

Departments shall take one or more of the following steps to ensure employees have access to drinking water:
   1. Provide access to drinking fountains
   2. Supply water cooler/dispenser and single service cups
   3. Supply sealed one time use water containers

Drinking water and water dispensers shall meet the following requirements:
• All sources of drinking water shall be maintained in a clean and sanitary condition
• Drinking water must always be kept cool. When temperatures exceed 90°F it is recommended that ice be provided to keep the water cool.
• Potable drinking water dispensers used to provide water to more than one person shall be equipped with a spigot or faucet
• Any container used to store or dispense drinking water shall be clearly marked as to the nature of its contents and shall not be used for any other purpose
• Dipping or pouring drinking water from containers, such as barrels, pails or tanks, is prohibited regardless of whether or not the containers are fitted with covers
• The use of shared cups, glasses or other vessels for drinking purposes is prohibited
• Non-potable water shall not be used for drinking
• Outlets for non-potable water shall be posted in a manner understandable to all employees that the water is unsafe for drinking
Access to Shade
Supervisors are responsible to ensure that employees have access to a shaded area regardless of temperature. Shaded areas should be large enough to accommodate the number of employees on recovery or rest period or meal period on a shift and allow employees to sit in the shade without touching each other.

The nearest shaded area must be as close as practicable. Usually this will mean that shade must be reachable within a 2 1/2 minute walk, but in no case more than 1/4-mile or a five minute walk away, whichever is shorter.

Canopies, umbrellas or other temporary structures may be used to provide shade, provided they block direct sunlight. Trees and dense vines can provide shade if the canopy of the trees is sufficiently dense to provide substantially complete blockage of direct sunlight. Areas shaded by artificial or mechanical means, such as by a pop-up canopy as opposed to a tree, must provide means for employees to avoid contact with bare soil. Shade areas can be open air, or provided with ventilation or cooling.

The interior of a vehicle may be used to provide shade if the vehicle is air-conditioned and the air conditioner is operating. The shade area must serve the purpose of allowing the body to cool down.

Shade structures must be available at the beginning of the shift and present throughout the day. Regardless of predicted temperatures, supervisors must always have the capability to provide shade promptly if it is requested by an employee

High Heat Procedures
High heat procedures apply when the temperature equals or exceeds 95 degrees Fahrenheit. During high heat procedures, supervisors will:

1) Ensure effective communication by voice, observation, or electronic means so that all employees can contact supervisor when necessary. Cell phones can be used if there is proper and consistent reception.

2) Observe employees for alertness and signs or symptoms of heat illness by using one of the following methods:
   a) supervisor observes 20 or fewer employees
   b) employees use the buddy system
   c) regular communication of sole employee (radio, cell phone, or other effective means of communication)

3) Designate one or more employee(s) on each worksite as the person responsible for calling emergency services. This does not prohibit other employees from calling emergency services in case of emergency.

4) Remind employees to drink water throughout the shift, and

5) Have pre-shift meetings before work begins to review these procedures, encourage the drinking of water, and remind employees about their right to cool down rests when necessary.

The High Heat Procedures information is in Appendix A: UC Irvine Heat Illness Prevention Program Work Planning and Site Checklist.

Acclimatization
Supervisors are required to acclimatize employees and allow time to adapt when temperatures rise suddenly and employee risks for heat illness increase.
Acclimatization may also be required for new employees, employees working at temperatures to which they haven’t been exposed for several weeks or longer, or employees assigned to new jobs in hot environments.

Generally, about four to fourteen days of daily heat exposure is needed for acclimatization. Heat acclimatization requires a minimum daily heat exposure of about two hours of work. Gradually increase the length of work each day until an appropriate schedule adapted to the required activity level for the work environment is achieved. This will allow the employee to acclimate to conditions of heat while reducing the risk of heat illness.

It should be noted that new employees are among those most at risk of suffering the consequences of inadequate acclimatization. Supervisors with new employees should be extra-vigilant during the acclimatization period, and respond immediately to signs and symptoms of possible heat illness.

Supervisors will closely observe all employees during a heat wave, defined by Cal/OSHA as “any day in which the predicted high temperature for the day will be at least 80 degrees Fahrenheit and at least 10 degrees Fahrenheit higher than the average high daily temperature in the preceding five days”.

### Preventive Recovery Periods

The purpose of the recovery period is prevention of heat illness. The supervisor is required to provide access to shade for employees who believe they need a preventive recovery period from the effects of heat and for any who exhibit indications of heat illness. Employees shall be allowed and encouraged to take preventative cool down rests in the shade.

Access to shade must be allowed at all times, and employees must be allowed to remain in the shade for at least five minutes. The employees will be monitored for signs of heat illness and asked if they are experiencing heat illness. They will also be encouraged to stay in the shade and not return to work until signs or symptoms of heat illness have abated.

The purpose of the preventive recovery period is to reduce heat stress on the employee. The preventive recovery period is not a substitute for medical treatment.

### Emergency Procedures

If an employee has any symptoms of heat illness, first-aid / emergency procedures should be initiated without delay by employees and supervisors. Supervisors must ensure effective communication by voice, observation, or electronic means so that all employees can contact supervisor when necessary. Cell phones can be used if there is proper and consistent reception. The supervisor must ensure that emergency services can be summoned.

### Training

Training shall be provided and/or facilitated by EH&S for all potentially impacted employees, and their supervisors, who are working where environmental risk factors for heat illness are present. An online training is available on UCLC, searchword: “Heat Illness Prevention”

Training information shall include, but not be limited to:

- Environmental and personal risk factors for heat illness, as well as the added burden of heat load on the body caused by exertion, clothing, and personal protective equipment.
- Employer procedures for complying with the requirements of the standard including: employer’s responsibility to provide water, shade, cool down rests, and access to first aid and the right to exercise these rights without retaliation.
- Identifying, evaluating, and controlling exposure to environmental risk factors for heat illness.
• The importance of frequent consumption of hydrating fluids, up to 1 quart (4 cups of water) per hour, when environmental risk factors for heat illness are present, particularly when employee is excessively sweating during the exposure

• The importance of and methods of acclimatization

• Different types of heat illness and the common signs and symptoms of heat illness, appropriate first aid/ emergency response, and the rapid progression of heat illness to a heat related emergency

• The importance of immediately reporting symptoms or signs of heat illness, in themselves or in co-workers, to their supervisor

• Understanding the procedures for responding to heat illness / injury and contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by emergency medical service

• Procedures for ensuring that, in the event of an emergency, clear and precise direction to the work site can and will be provided to emergency responders. This includes designating a person to be available to ensure emergency procedures are followed.

Supervisors shall receive training on the following topics prior to being assigned to supervise employees that may be exposed to high heat.

• The training information required of the employees, detailed above

• Procedures supervisors are to follow to implement the provisions of this program

• Procedures the supervisor shall follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures

• How to monitor weather reports and how to respond to hot weather advisories

Retraining will be required under any of the following conditions:

• Changes in the workplace render previous training obsolete

• Inadequacies in an employee’s knowledge of heat illness prevention indicate that the employee has not retained the required training

Training records shall be maintained by EH&S for a minimum of 3 years.

Appendix C contains the Heat Illness Prevention flyer that may be shared with impacted stakeholders/campus partners as a reminder of the elements of the campus Heat Illness Prevention program.

6. Reporting Requirements

Constant awareness of and respect for heat illness prevention procedures and compliance with all applicable safety rules is mandatory.

Employees may report any safety concerns to their supervisor or EH&S.

Supervisors may issue warnings to employees and implement disciplinary actions up to and including termination for failure to follow the guidelines of this program.

Representatives of EH&S are authorized to issue safety warnings to departments, supervisors, and
employees and stop unsafe work from continuing.

7. References

Title 8 California Code of Regulations, General Industry Safety Orders - §3395

Heat Illness Prevention: What you need to know

Heat Illness Prevention enforcement Q&A http://www.dir.ca.gov/dosh/heatIllnessQA.html

Protect Yourself from Heat Illness

CalOSHA Heat Illness Prevention eTool
https://www.dir.ca.gov/dosh/etools/08-006/

OSHA/NIOSH Heat Safety App
https://www.cdc.gov/niosh/topics/heatstress/heatapp.html

Appendix A: Heat Advisory Notification Sample
Appendix B: UC Irvine Heat Illness Prevention Program Work Planning and Site Checklist
Appendix C: Heat Illness Prevention Flyer
APPENDIX A
Heat Advisory Notification Sample
To our campus partners:

Please be mindful of the weather over the next couple of days if you or your staff will be working outdoors. The temperature is predicted to be in the 80's from Friday, 10/15/2021 through Saturday, 10/16/21:

Please click the following link Work Planning and Site Checklist to help prevent heat illness and document acknowledgment. Remember to implement the “high-heat” procedures noted on the checklist if temperatures equal or exceed 95 degrees. Please make sure you and your employees are aware of the heat and the procedures needed. Stay hydrated and do your best to keep cool.

The Environmental Health & Safety Office will continue to monitor for warm weather and share any accompanying heat advisories shared by the Orange County Health Care Agency.

For additional information, please visit the following resources:

UCI EH&S Heat Illness Prevention Program
CalOSHA
UC Irvine Heat Illness Prevention Program
Work Planning and Site Checklist
Revised: June 2021

Required when temperatures are expected to exceed 80 °F

Department/Group/Project: ________________________________________________________
Supervisor Name and Phone Number: ____________________________________________
Worksite Location (specific enough for emergency response, use landmarks if needed):
____________________________________________________________________________
____________________________________________________________________________
Expected Temperature: __________________________________________________________
Employees Covered (use back as needed): __________________________________________
Checklist Completed by: __________________________________ Date: ________________

<table>
<thead>
<tr>
<th>Drinking Water Availability</th>
<th>At least one quart (4 cups) required per employee per hour for the entire shift; i.e. an 8 hour shift requires 2 gallons per employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Plumbed water</td>
<td>□ Water cooler provided □ Bottled water provided □ Other, describe below:</td>
</tr>
</tbody>
</table>

How will employees be provided access to sufficient drinking water? For backcountry trips or other work in remote locations describe expected natural water sources and treatment methods (e.g. filtration, boiling, chemical disinfection).

<table>
<thead>
<tr>
<th>Shade</th>
<th>May be provided by any natural or artificial means that does not expose employees to unsafe or unhealthy conditions. Shade is not considered adequate when heat in the area does not allow the body to cool (e.g. sitting in a hot car).</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Building structures</td>
<td>Trees</td>
</tr>
</tbody>
</table>

How will employees be provided access to adequate shade?

<table>
<thead>
<tr>
<th>Emergency Medical Response</th>
<th>All employees must be able to provide clear and precise directions to the work site □ Cell phone service available □ If no cell service, describe emergency plan below:</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider? Where is the nearest phone? (use back as needed)</td>
<td></td>
</tr>
<tr>
<td>For remote locations, list employees on site trained in First Aid and verify that a Field Safety Plan is in place and available:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High Heat Procedures - Required when temperatures expected to exceed 95° F</th>
<th>If possible limit strenuous tasks to morning or late afternoon hours. Rest breaks in shade must be provided at least 10 minutes every 2 hours (or more if needed). Effective means of communication, observation and monitoring for sign of heat illness is required at all times. Pre-shift meeting required.</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Direct supervision □ Buddy system □ Reliable cell or radio contact □ Other, describe below:</td>
<td></td>
</tr>
</tbody>
</table>
List names of any new employees working in heat for less than 14 days that must be supervised at all times:

UC Irvine Heat Illness Prevention Work Site Checklist

<table>
<thead>
<tr>
<th>Signs &amp; Symptoms</th>
<th>Treatment</th>
<th>Response Action</th>
</tr>
</thead>
</table>
| HEAT EXHAUSTION        | 1. Stop all exertion.  
2. Move to a cool shaded place. 
3. Hydrate with cool water. | The most common type of heat illness. Initiate treatment. If no improvement, call 911 and seek medical help. Do not return to work in the sun. Heat exhaustion can progress to heat stroke. |
| HEAT STROKE            | 1. Move (gently) to a cooler spot in shade.  
2. Loosen clothing and spray exposed skin with water and fan. 
3. Cool by placing ice or cold packs along neck, chest, armpits and groin. 
4. Do not place ice directly on skin. | Call 911 or seek medical help immediately.  
Heat stroke is a life threatening medical emergency. A victim can die within minutes if not properly treated. Efforts to reduce body temperature must begin immediately! |
| Dizziness, headache   |                                                                           |                                                                                                                  |
| Rapid heart rate       |                                                                           |                                                                                                                  |
| Pale, cool, clammy or flushed skin |                                                                           |                                                                                                                  |
| Nausea and/or vomiting |                                                                           |                                                                                                                  |
| Fatigue, thirst, muscle cramps |                                                                           |                                                                                                                  |
| Disoriented, irritable, combative, unconscious |                                                                           |                                                                                                                  |
| Hallucinations, seizures, poor balance |                                                                           |                                                                                                                  |
| Rapid heart rate       |                                                                           |                                                                                                                  |
| Hot, dry and red skin (possibly moist and pale) |                                                                           |                                                                                                                  |
| Fever, body temperature above 104°F |                                                                           |                                                                                                                  |

Other Notes  
(Attach other documents, maps, etc. as needed)

Related Resources

Emergency/ Medical Response: 911
Office of Environment, Health & Safety: [http://ehs.uci.edu](http://ehs.uci.edu) or 949.824.6200
Cal/OSHA Heat Illness Information and Regulations: [https://www.dir.ca.gov/dosh/heatillnessinfo.html](https://www.dir.ca.gov/dosh/heatillnessinfo.html)
APPENDIX C

Heat Illness Prevention Flyer
HEAT ILLNESS PREVENTION

When Temperatures Are Expected To Exceed 80 degrees F (8CCR3395)

What every Employee should know——

- The hazards/conditions and signs/symptoms that can result in Heat Illness

![Signs and Symptoms](image)

- Headache
- Unusual fatigue
- Muscle cramps
- Pale skin
- Heavy sweating

- The methods for preventing Heat Illness

  - WATER - Drink plenty! Water shall be fresh, pure, suitably cool, free, and readily accessible
  - SHADE - Shall be accessible at all times, but shade must be made present when outdoor temperatures exceed 80 degrees Fahrenheit (for indoor environments, rest in cooler areas)
  - COOL-DOWN REST PERIOD (in the shade) - Shall be encouraged, and the employee shall be monitored until the symptoms of heat illness abate; first aid procedures may be initiated
  - ACCLIMATIZATION - Techniques shall be employed to allow the body to adapt gradually to the heat

- The Emergency Response Procedures

  - EFFECTIVE COMMUNICATION - Whether through direct contact or a designated person, a method for contacting the supervisor and/or emergency medical services shall be established and conveyed to all affected persons
  - RESPONSE TO SIGNS AND SYMPTOMS - Steps shall be taken to immediately prevent the progression of heat illness, including the provision of basic first aid, obtaining emergency medical services, and not allowing the employee exhibiting the signs and symptoms of heat illness to be left alone or sent home without offering on-site first aid or emergency medical services
  - EMPLOYEE TRANSPORT - When necessary, the stricken employee may need to be taken to a place where s/he can be reached by the emergency medical services
  - DIRECTIONS - Clear and precise directions to the worksite shall be provided to the emergency responders

Questions?
949.824.6200
safety@uci.edu