HEAT ILLNESS PREVENTION & RESPONSE

Work in hot environments can result in heat illness - a group of medical conditions resulting from the body’s inability to cope with a particular heat load. Mild heat illnesses have the potential of becoming severe life threatening emergencies if not treated properly. University employees who may be at risk for heat illness include, but are not limited to, field researchers, grounds crews, and building/rooftop maintenance workers. This fact sheet provides information on heat illness and establishes campus and field station procedures for preventing and responding to heat illness.

Illnesses & Treatment

<table>
<thead>
<tr>
<th>Heat Illness</th>
<th>Signs &amp; Symptoms</th>
<th>Treatment</th>
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</thead>
<tbody>
<tr>
<td>Heat Edema</td>
<td>Swelling of the hands, feet and ankles is common during the first few days in a hot environment.</td>
<td>Heat edema is usually self-limiting and typically does not require any treatment.</td>
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<td>Heat Rash</td>
<td>Sweat ducts become plugged, resulting in itchy, red, bumpy rash on areas of the skin kept wet from sweating.</td>
<td>Cool and dry the affected skin and avoid conditions that may induce sweating.</td>
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<td>Heat Cramps</td>
<td>Painful muscle spasms or cramps that usually occur in heavily exercised muscles. Spasms often begin when a person is resting after exercise.</td>
<td>Rest in a cool environment and gently apply steady pressure to the cramped muscle. Drink cold water containing a small amount of salt or diluted sports hydration beverage.</td>
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<td>Heat Syncope (fainting)</td>
<td>Faintness, dizziness, headache, increased pulse rate, restlessness, nausea, vomiting, and possibly even a brief loss of consciousness.</td>
<td>Lie in a horizontal position in a cool place with legs elevated to promote blood flow.</td>
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<tr>
<td>Heat Exhaustion</td>
<td>Malaise, headache, weakness, dehydration, nausea, and loss of appetite. Skin may appear pale and clammy. Vomiting is common. Victims are sweating, have a normal mental state and remain coordinated, but feel dizzy when standing up.</td>
<td>This is the most common type of heat illness. Stop all exertion and move to a cool shaded place. Remove constrictive clothing. Drink water with salt or sports hydration beverages. Fan and cool by placing ice or cold packs along neck, chest, armpits and in groin - (do not place ice directly on skin).</td>
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<tr>
<td>Heat Stroke</td>
<td><strong>Hot skin</strong> and abnormal mental state are the key symptoms of heat stroke. Victims may seem confused, disoriented, and may still be sweating. Anyone with an elevated temperature and an altered mental state should be considered a victim of heat stroke. The victim will also likely have increased heart and breathing rates. Seizures, coma and death are possible.</td>
<td><strong>Call 9-1-1 or seek medical help immediately. Heat stroke is a life threatening medical emergency. A victim can die within minutes if not properly treated.</strong> Efforts to reduce body temperature must begin immediately! Move (gently) to a cooler spot or shade. Fan and cool by placing ice or cold packs along neck, chest, armpits and in groin - (do not place ice directly on skin). Do not give anything to drink due to the risk of vomiting and aspiration.</td>
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**Contributing Factors**

- Air temperature, relative humidity, radiant heat from the sun or other sources, conductive heat from the ground or other sources, air movement, workload severity and duration, and clothing
- Employee’s age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications may affect the body’s water retention and other physiological response to heat

**Preventing Heat Illness**

- **Take Breaks** - a “preventative recovery period” in shade (with an opportunity to drink water) is required to recover from heat and prevent heat illness
- **Allow for Acclimatization** - Acclimatization is a temporary adaptation of the body to work in the heat that occurs gradually as a person is exposed to hot conditions (usually takes 4 to 14 days of regular work for at least 2 hours per day in the heat)
- **Provide Access to Shade** - The direct heat of the sun can add as much as 15° F - wide brimmed hats can decrease the impact of direct heat. If possible, work should be performed in the shade. If not, supervisors should provide a shaded area for breaks such as canopies, umbrellas, or other structures or devices that block direct sunlight
- **Drink Water** - Frequent drinking of water is encouraged
  1. Supervisors must ensure employees have access to potable drinking water in sufficient quantity to provide each employee one quart (4 cups) of water per hour for the entire shift
  2. Avoid caffeinated or alcoholic beverages
  3. Generally, dark yellow urine indicates dehydration and the need to drink more water
- **Identify, Evaluate, & Control Exposures** - Employees, supervisors, and safety committees should periodically discuss and/or update procedures to identify, evaluate and control exposures to factors that contribute to heat illness
  1. Supervisors should monitor employees closely for signs and symptoms of heat illness, particularly when they have not been working in heat for the last few days, and when a heat wave occurs
  2. Environmental Health & Safety (EH&S) is available upon request (827-5528) to help assess various job tasks and environmental conditions, and to assist supervisors in providing heat illness prevention training
- **General Rule** - actions to prevent heat illness should be implemented when temperatures approach 80° F; during heat waves, it is advised that strenuous outdoor work be performed early in the morning or late in the afternoon when heat is less intense

**Obtaining Emergency Medical Services**

- It is important to immediately report any symptoms/ signs of heat illness in oneself or co-workers
- Emergency medical service is generally available by calling 9-1-1 (this may not be available for remote field locations)
- Supervisors should remind employees what to do if emergency medical treatment is needed
  1. Provide procedures for contacting emergency medical services and, if necessary, transport for employees to a point where they can be reached by an emergency medical provider must be available (visit [www.ehs.ucr.edu/ep](http://www.ehs.ucr.edu/ep) & [http://ehs.ucr.edu/ep/fp/accidentVersion21.pdf](http://ehs.ucr.edu/ep/fp/accidentVersion21.pdf) to learn what to do in emergencies)
  2. In remote field locations, develop procedures for emergency medical services and ensure employees are informed of exactly how and where medical attention may be received - information about field safety is available at [http://ehs55.ehs.uci.edu/fieldsafe/index.jsp](http://ehs55.ehs.uci.edu/fieldsafe/index.jsp) to help with planning

Visit [www.ehs.ucr.edu](http://www.ehs.ucr.edu) for additional information or call EH&S at 827-5528 if you have any questions.