FACT SHEET

Berkeley Environment, Health & Safety

Outdoor Heat Illness Prevention and Response

Work in hot environments can result in heat illness, a group of medical conditions caused by the body's inability to cope with heat. Heat illness includes heat cramps, heat exhaustion, fainting, and heat stroke.

All university employees who work outdoors may be at risk for heat illness including, but not limited to, field researchers, grounds crews, maintenance workers, and special event staff. Supervisors are responsible for ensuring that the following measures are taken to prevent heat illness among employees and completing the Work Planning and Site Checklist to document that controls are in place whenever temperatures are expected to reach 80°F or higher. This fact sheet provides information about heat illness and establishes UC Berkeley campus and field procedures for preventing and responding to it. For more information, visit the EH&S Website.

Procedures for Preventing Outdoor Heat Illness

Take Breaks

Workers must be provided a preventative recovery period in shade for at least five minutes to recover from heat in order to prevent heat illness. Rest breaks also provide an opportunity to drink water.

Allow for Acclimatization

Acclimatization is a temporary adaptation of the body to work in heat. It occurs gradually as a person is exposed to hot conditions, and takes 4 to 14 days for most people. Training about heat illness prevention is needed before starting work in hot conditions and, when possible, workers should be encouraged to take more breaks and perform less strenuous tasks during the acclimatization period.

Provide Access to Shade

Wide brimmed hats can decrease the impact of direct heat from the sun. If possible, work should be performed in the shade. If not, supervisors must provide a shaded area for breaks such as under trees, canopies, umbrellas, or other structures that block direct sunlight.

Shade is not considered adequate for breaks if heat in the area defeats the cooling purpose of shade. A car sitting in the sun, for example, does not provide acceptable shade to a person inside it, unless the car is running with air conditioning.

Drink Water

Keep hydrated. Frequent drinking of water is encouraged. Supervisors must ensure that employees have access to one quart (four cups) of fresh, pure and suitably cool drinking water per hour for the entire shift when the work environment is hot. During periods of high heat, drinking water is very important; avoid caffeinated or alcoholic beverages. Generally, dark yellow- colored urine indicates dehydration and the need to drink more water.

Identify, Evaluate, and Control Exposures

Supervisors should monitor employees closely for signs and symptoms of heat illness, particularly when employees are not acclimated, and when a heat wave occurs. Employees, supervisors, and safety committees should periodically discuss and update procedures to identify, evaluate and control high

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risk tasks for heat illness.

The Office of Environment, Health & Safety (EH&S) is available upon request to help assess various job tasks and environmental conditions and to provide heat illness prevention training.

All workers should be accounted for during and at the end of a work shift. There is no absolute cutoff below which work in heat is not a risk. As a 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, if necessary, early in the morning or late in the afternoon when heat is less intense.

Monitor Weather Conditions

Supervisors are responsible for monitoring weather conditions and heat waves at specific locations where work activities are planned. Useful web resources include the National Weather Service website and the Weather Underground website. Alternatively, a thermometer may be used at the work site.

Additional High Heat Controls

When the outdoor temperature exceeds 95°F, a pre-shift meeting is required, and effective communication must be maintained. Whether by voice, observation, or phone or text, employees must be able to contact a supervisor at all times.

Supervisors must monitor employees for alertness and signs or symptoms of heat illness. They must also remind employees to drink plenty of water throughout the work shift and take a mandatory 10-minute cool-down break in the shade every two hours. Any new employees that have been working for less than 14 days must be closely supervised at all times.

Heat illness is the result of dehydration and elevated body temperatures. Common early symptoms and signs of heat illness include headache, muscle cramps, and unusual fatigue. Progression to more serious illness can be rapid and include unusual behavior, nausea or vomiting, weakness, rapid pulse, excessive sweating or hot dry skin, seizures, and fainting or loss of consciousness. Always remember that mild heat illness has the potential to become a severe life-threatening emergency if not treated properly.

- See Signs and Symptoms Heat Illness Table.
- If you need information regarding INDOOR heat illness prevention, please reference Cal/OSHA's Indoor Heat Illness Prevention Fact Sheet.

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Signs and Symptoms

Table 1. Types of Heat Illness

Type of Heat Illness	Signs and Symptoms	Treatment
Heat Edema	Swelling of the hands, feet and ankles is common during the first few days in a hot environment.	Heat edema is usually self-limiting and typically does not require any treatment.
Heat Rash	Sweat ducts become plugged, resulting in itchy, red, bumpy rash on areas of the skin kept wet from sweating.	Cool and dry the affected skin and avoid conditions that may induce sweating.
Heat Cramps	Painful muscle spasms or cramps that usually occur in heavily exercised muscles. Spasms often begin when a person is resting after exercise.	Rest in a cool environment and gently apply steady pressure to the cramped muscle. Drink cold water containing a small amount of salt or a diluted sports hydration beverage.
Heat Exhaustion	Faintness, dizziness, headache, increased pulse rate, restlessness, nausea, vomiting, and possibly even a brief loss of consciousness.	This is the most common type of heat illness. Stop all exertion and move to a cool shaded place. Remove constrictive clothing. Drink water. Loosen clothing and spray clothes and exposed skin with water and fan. Cool by placing ice or cold packs along neck, chest, armpits and groin (do not place ice directly on skin). Do not return to work in the sun. If condition does not improve, seek medical help. Heat exhaustion can progress to heat stroke.
Heat Stroke	Symptoms similar to Heat Exhaustion, except that the skin is hot/dry/red, sweating has stopped, and there is high fever (over 104°F).	This is a medical emergency. Call 9-1-1 and be prepared to provide emergency responders the exact location of the employee. Try to cool the body while waiting for responders to arrive.