FACT SHEET

Berkeley Environment, Health & Safety

Indoor Heat Illness Prevention and Response

Work in hot indoor 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.

University employees who work in high-heat indoor locations may be at risk for heat illness including, but not limited to, maintenance workers, cooks, researchers and others. 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 indoor temperatures are expected to reach 82°F or higher.

This fact sheet provides information about heat illness and establishes procedures for preventing and responding to it. For more information, visit the EH&S Website. An online training course on Heat Illness is available in the Learning Management System.

Procedures for Preventing Indoor Heat Illness

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 Cool-Down Areas

Employees need a place to rest and cool down when working in hot environments. One or more cool-down areas less than 82°F must be provided when employees must work in hot indoor areas. The area must be large enough to accommodate the number of employees resting, so they can sit in normal posture without physical contact with others. The area must be as close to the work site practicable.

Employees should be encouraged to take preventative rest breaks. Supervisors shall monitor employees and ask if they are experiencing symptoms of heat illness. If symptomatic, employees shall not return to work until symptoms have abated and they have remained in the cool-down area for at least 5 minutes. If an employee shows signs of heat illness, first aid or emergency response should be provided.

Drink Water

Employees working in hot areas should stay hydrated. Frequent drinking of water is encouraged. Supervisors must ensure that employees have access to one quart (four cups) of fresh, clean and suitably cool drinking water per hour for the entire shift when the work environment is hot. Water should also be provided in the cool-down area.

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. Water should be consumed regularly during high heat, whether thirsty or not.

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Identify, Evaluate, and Control Exposures

Supervisors should monitor employees closely for signs and symptoms of heat illness, particularly when employees are not acclimated, and or when a heat wave occurs. Employees, supervisors, and safety committees should periodically discuss and update procedures to identify, evaluate and control high risk tasks for heat illness. Control measures for heat illness prevention include the following:

Identifying Personal Risk Factors for Heat Illness - Employees may be more susceptible to heat illness if they are overweight, have high blood pressure, diabetes, heart disease, have a lower fitness level, use medications or illicit drugs, or consume alcohol.

Engineering Controls - Engineering controls reduce and maintain either, or both, the temperature and heat index in the work area to below 87°F (or lowest possible level) when employees are present, or reduce the temperature to below 82°F (or lowest possible level) when employees wear clothing that restricts heat removal or work in high radiant heat areas. Examples of engineering controls include portable air conditioners, evaporative coolers, shielding or insulating of high-heat sources, and negative-air systems (e.g. exhaust hoods).

Administrative Controls - When engineering controls cannot reduce indoor work temperatures sufficiently, administrative controls such as allowing for acclimatization and shortening work periods may help. If employees work less than 15 minutes per hour in high-heat areas (up to 95°F) then the Cal/OSHA Heat Illness Prevention Standard technically does not apply.

Personal Protective Equipment (PPE) - This is the last line of defense to protect workers from high heat exposure. Examples include water, ice, or air-cooled garments such as cooling vests, jackets, neck wraps; supplied-air cooling systems; heat-reflective clothing; and insulated suits. Some PPE items worn to protect the employee from other hazards can increase the risk of heat illness (e.g. respirators and head coverings).

Emergency Response Procedures - Supervisors should monitor employees working in hot indoor environments and be prepared to render first aid or call emergency services. Heat exhaustion may be treatable at the worksite. Heat stroke, however, is a medical emergency and 9-1-1 should be called. Employees showing any signs of heat illness should be offered first aid or medical treatment, and they should not be sent home without determining their health status first.

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. During heat waves, it is advised that strenuous work be performed, if necessary, early in the morning or late in the afternoon when outdoor heat is less intense. Employees in administrative positions should be encouraged to wear light, comfortable clothing during a heat wave if the office space lacks sufficient cooling. Department managers should consider alternate work locations where indoor temperatures are kept below 87°F.

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Monitor Weather Conditions

Supervisors are responsible for monitoring weather conditions and heat waves. Useful web resources include weather.gov and wunderground.com. A thermometer may be used at the work site to measure indoor temperatures.

Additional High Heat Controls

When the indoor temperature exceeds 95°F, hold a pre-shift meeting with workers and maintain effective communication with them. 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 should also remind employees to drink plenty of water throughout the work shift and to take cool-down breaks in the cool-down area every hour, or as often as necessary to prevent onset of heat illness symptoms. 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.

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.

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Type of Heat Illness	Signs and Symptoms	Treatment
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.

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.