



Heat Illness Prevention

I. Policy

It is the policy of California State University, San Marcos (CSUSM) to maintain, insofar as can reasonably be expected, a campus environment for faculty, staff, students and the public that will not adversely affect their health and safety nor subject them to avoidable risks of accidental injury or illness. CSUSM also requires compliance where the word "shall" is used and offers guidance when the word "should" is used.

CSUSM has established the Heat Illness Prevention safety program to outline an approach in creating a safe environment for employees, and for certain members of the campus community.

II. Authority

California Code of Regulations, Title 8 sections 3395 and 3400

Occupational Safety and Health Act of 1970, section 5(a)(1)

III. Scope

For the continued safety of employees of CSUSM, this program outlines procedures consistent with the University's Injury & Illness Prevention Plan (IIPP). First line supervisors are the primary sources for ensuring employees receive safety training that is applicable to their specific job tasks.

The Heat Illness Prevention program establishes procedures for employees performing tasks both indoors and outdoors, and provides information that is necessary to ensure members of the campus community are knowledgeable in the prevention and recognition of heat illness, which helps to ensure their safety and that of others.

IV. Definitions

Acclimatization – The improvement in heat tolerance that comes from gradually increasing the intensity or duration of work performed in a hot setting.

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.

Heat Wave – Any day in which the predicted high temperature for the day will be at least 80 degrees Fahrenheit and at least ten degrees Fahrenheit higher than the average high daily temperature in the preceding five days.

Indoor(s) – A space under a ceiling or overhead covering bound on at least half of all sides by walls. A wall includes, but is not limited to, any door, window, retractable divider, garage door, or other physical barrier that is temporary or permanent, whether open or closed. Includes the space inside a vehicle.

Shade – Blockage of direct sunlight. Shade is considered sufficient 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 as long as it does not expose employees to unsafe conditions, or deter access/use.

Temperature – The dry bulb condition in degrees Fahrenheit obtainable by using a thermometer to measure the outdoor temperature in an area where there is no shade.

V. Responsibilities

A. Provision Responsibilities

1. Department heads and unit managers have the primary responsibility for determining heat illness hazards for their employees. Safety, Health and Sustainability (SH&S) may review department determinations of those assigned in high temperature risk operations.
2. Department heads and unit managers are responsible for providing required protective clothing and equipment for involved in high temperature risk operations.
3. Supervisors and other individuals who are responsible for employees, students, and visitors must assure that the employees, students, and visitors receive information about the requirements for performing tasks involving high heat risks and enforcing such requirements. Supervisors are responsible for conducting a job hazard analysis to determine high temperature safe operations both indoors and outdoors.
4. Employees are responsible for complying with requirements when performing task involving high temperature risks. Failure to comply may result in corrective action as described in applicable personnel policies or collective bargaining agreements.

B. Employees

The operator is responsible for following the requirements of the Heat Illness Prevention program. This involves:

1. Wearing personal protective equipment (PPE) as required.
2. Attending required training sessions.

3. Immediately reporting to their supervisor any symptoms or signs of heat illness (in themselves or co-workers).

C. Administration and Supervisors

Supervisors have the primary responsibility for implementation of the Heat Illness Prevention program in their work area. This involves:

1. Providing appropriate temperature mitigation equipment and making it available to employees.
2. Ensuring operators receive appropriate training regarding heat illness prevention.
3. Maintaining records of heat illness training of employees.
4. Supervising staff to ensure adherence to Heat Illness Prevention program.
5. Seeking assistance from SH&S to conduct heat/temperature hazards assessments.
6. Update procedures when new heat/temperature hazards are introduced or processes added/changed.
7. Ensuring the immediate replacement of defective or damaged temperature mitigation related equipment.

D. Safety, Health & Sustainability (SH&S)

SH&S is responsible for the development, implementation, and administration of the Heat Illness Prevention program. This involves:

1. Conducting workplace hazard assessments to determine the presence of heat illness-related hazards, when requested.
2. Conducting periodic workplace reassessments as requested by supervisors and/or as determined by SH&S.
3. Maintaining records on heat illness hazard assessments.
4. Ensuring that adequate training and technical assistance is provided to supervisors on proper heat illness prevention.
5. Reviewing, updating, and evaluating the overall effectiveness of the Heat Illness Prevention program.

VI. Program

A. Recognizing Heat Illness

Heat related illnesses are avoidable if the employees are trained and the right actions are taken before, during, and after working in either indoor or outdoor hot conditions. High temperatures and humidity can stress the body's ability to cool itself making heat illness a big concern during hot weather months. Every employee whose job duties require them to

work in the outdoors during summer months, are exposed to elevated heat conditions and therefore are susceptible to heat illness.

The three major forms of heat illnesses are heat cramps, heat exhaustion, and heat stroke. Heat stroke can be a life-threatening condition. This document will outline those actions as well as describing the three major forms of heat illness, how to recognize them, and what actions to take to provide first aid before medical care is provided.

1. Heat Cramps

Description: Heat cramps are the most common type of heat related illness and probably have been experienced by nearly everyone at one time or another. Heat cramps are muscle spasms which usually affect the arms, legs, or stomach. Frequently they do not occur until sometime later after work, at night, or when relaxing. Heat cramps are caused by heavy sweating, especially when water is not replaced quickly enough. Although heat cramps can be quite painful, they usually don't result in permanent damage.

Symptoms Include: Heavy sweating, muscle pains or spasms in the arms, legs, or abdomen

First Aid: Workers experiencing heat cramps should drink electrolyte solutions such as Gatorade/Powerade and/or plenty of water during the day and try eating more fruits such as bananas to help keep the body hydrated and electrolytes stable during hot weather.

- If weather reports indicate hot weather is predicted hydration and electrolyte stability should begin 72 hours prior to heavy work or 24 hours for moderate work.
- Call University Police at 911 or contact supervisor immediately if the person becomes ill.

2. Heat Exhaustion

Description: Heat exhaustion is more serious than heat cramps. It occurs when the body's internal temperature regulating system is overworked but has not completely shut down. In heat exhaustion, the surface blood vessels and capillaries, which originally enlarged to cool the blood, collapse from loss of body fluids and necessary minerals. This happens when a person does not drink enough fluids to replace what they are sweating away.

Symptoms Include: Headache, heavy sweating, intense thirst, dizziness, fatigue, loss of coordination, nausea, impaired judgment, loss of appetite, hyperventilation, tingling in hands or feet, irritability, anxiety, cool moist skin, decreased urine output, elevated body temperature, weak and rapid pulse (120-200), and low to normal blood pressure.

First Aid: The employee suffering these symptoms should be moved to a cool location such as a shaded area or air-conditioned building.

- Have them lie down with their feet slightly elevated. Loosen their clothing, apply cool, wet cloths to the face, head, and neck and fan them.

- Have them drink water or electrolyte drinks. Try to cool them down and have them checked by medical personnel.

Victims of heat exhaustion should avoid strenuous activity for at least a day, and they should continue to drink water to replace lost body fluids. Contact the University Police Department (UPD) at 760-750-4567 or call 911 if the person becomes non-responsive, refuses water, vomits, or loses consciousness.

3. Heat Stroke

Description:

Heat stroke is a life-threatening illness with a high death rate. It occurs when the body has depleted its supply of water and salt, and the victim's core body temperature rises to deadly levels.

A heat stroke victim may first suffer heat cramps and/or heat exhaustion before progressing into the heat stroke stage, but this is not always the case. It should be noted that, on the job, heat stroke is sometimes mistaken for a heart attack.

It is therefore very important to be able to recognize the signs and symptoms of heat stroke - and to check for them anytime an employee collapses while working in a hot environment.

Symptoms Include: A high body temperature (103°F or above); a distinct absence of sweating (usually); hot red or flushed dry skin; rapid pulse; difficulty breathing; constricted pupils; any/all the signs or symptoms of heat exhaustion such as dizziness, headache, nausea, vomiting, or confusion, and possibly more severe systems including bizarre behavior and high blood pressure. Advance symptoms may be seizure or convulsions, collapse, loss of consciousness, and a body temperature of over 108°F.

First Aid: Call University Police at 9-911 or 760-750-4567 or to get the person medical aid as soon as possible.

- While waiting for emergency medical services to arrive, it is vital to lower a heat stroke victim's body temperature.
- Quick actions can mean the difference between life and death. Bring the person to a shaded area and remove excess clothing.
- Pour water on them, fan them, or apply wet clothes or cold packs.

B. Heat Illness Prevention Measures

Workers should be properly conditioned for working in hot environments. Conditioning should start slowly then build up to include more physical work at increased temperatures to allow the body to adjust over a few days (acclimatization).

1. Become acclimated to the heat slowly

Supervisors should work with their employees to develop an acclimatization schedule prior to assigning outdoor tasks in the heat. According to the Centers for Disease Control and Prevention (CDC), a heat acclimation schedule can be induced in 5 to 7 days of

exposure. For workers who have had previous experience with the job, CDC recommends an exposure regimen of 50 percent on day 1, 60 percent on day 2, 80 percent on day 3, and 100 percent on day 4.

For new workers, CDC recommends 20 percent exposure on day 1 and a 20 percent increase on each additional day. Remember that after approximately 4 days of working in cool conditions, workers' heat acclimation will decrease.

2. Practice Pre-hydration

Before the activity starts, workers should drink up to 16 ounces of fluid. After the activity begins, they should drink 8 ounces every 20 minutes during the activity.

Encourage workers to drink plenty of liquids and not wait until they are thirsty. Hydration is a continuous process.

- Hydration - Drink the right stuff. Studies have shown that flavored water is more effective than plain water at providing hydration. This is simply because plain water is much better at quenching thirst and, therefore, people drink less of it.
 - People will drink a larger volume of flavored water because they will continue to feel thirsty.
 - Workers should avoid alcohol and caffeinated beverages like coffee and soda as these liquids can have the opposite effect and can actually increase the level of dehydration.
 - Though alcohol is prohibited on the job, workers should be educated to avoid it before and after shifts worked in hot temperatures as well.
- Electrolyte drinks are good for replacing both water and minerals lost through sweating (i.e., Squincher, Powerade, Gatorade.)

Take frequent breaks, especially if experiencing headache, or start feeling overheated.

Assure that adequate water and shade are available at the job site before work is to begin.

3. Clothing.

The body loses a lot of heat out of the top of the head. In winter, hats are worn to keep the heat in. However, in summer, the body wants to release heat. If workers are in hot shade, advise them against wearing a hat. If they are in direct sun and need shading, recommend they wear a visor or cap.

Wear the right fabric. Cotton is great at absorbing moisture from the skin while sweating, but it can create a problem if the fabric becomes soaked. Wear lightweight, light colored clothing when working out in the sun. If possible, recommend workers wear a loose, thin, white, synthetic t-shirt while working in the heat. Synthetic material does not absorb sweat, but instead, sends it off the skin to be quickly evaporated. Synthetic fabrics will keep workers cooler and safer from dangers of heat illness.

Recommend employees follow these health-smart tips for beating summer heat hazards, both on and off the job.

4. Personal Protective Equipment (PPE).

Don't remove PPE. Workers must wear all required PPE even when working in hot conditions. However, be sure to listen to workers and offer breaks when needed.

Immediately report all unsafe conditions and/or concerns to supervisor or area manager.

For additional information on Heat Illness Prevention, contact supervisor or the Safety, Health & Sustainability at extension 760-750-4502.

C. Provision for Outdoor Workers

The University will ensure the following provisions are made available for workers whose responsibilities require them to work outdoor:

1. Provision of Water. The University will ensure workers have access to fresh, pure, suitable cool water free of charge. At least one quart per employee per hour for the entire working shift will be accessible or provided.
2. Access to Shade. Shade shall be available when the outdoor temperature exceeds 80°F. Shade will consist of an area that blocks sunlight that is open to air or provided with ventilation or cooling. Workers are encouraged to take preventive cool-down rest in the shade to prevent overheating. If an employee show signs or symptoms of heat illness during cool down rest, and they do not improve after drinking water, seek appropriate first aid or emergency medical services immediately.
3. High-heat procedures.

These apply to employees performing landscaping, agriculture, construction, or oil and gas extraction when outdoor temperatures exceed 95°F. When feasible and practical, outdoor work should be avoided, limited in duration, or rescheduled when outdoor temperatures exceed 95°F.

Supervisors should check the weather forecast in advance of assigning outdoor tasks during summer months and/or anticipated heat waves. If the work cannot be avoided, the worker and their supervisor shall ensure they have a reliable means of communication for the worker to contact his/supervisor if necessary and for the supervisor, or designee, to check with the employee(s) regularly for signs and symptoms of heat illness.

D. Emergency Response Procedures.

The University shall ensure outdoor workers will have an effective means of communicating with their supervisor or emergency medical services when working outdoor when the outdoor temperature exceeds 80°F.

1. A buddy system or regular and direct observation of outdoor workers will be used to monitor for signs and symptoms of heat illness. The supervisor shall ensure the workers know when and how to give or obtain first aid care if needed.
2. Emergency service providers should be called immediately if an employee displays signs or symptoms of severe heat illness (e.g., decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior, incoherent speech, convulsions, red and hot face), does not look okay, or does not get better after drinking cool water and resting in the shade.
 - While the ambulance is en route, first aid will be initiated (i.e., cool the employee by placing the employee in the shade, removing excess layers of clothing, placing ice packs in the armpits and groin area, and fan the victim).
 - Workers and supervisors must be able to describe the location of outdoor workers for emergency medical services.

Responsible Manager: Environmental Health & Safety Manager
Responsible Department: Safety, Health & Sustainability
Originally Issued:
Revised: 10/2007 SH&S, 05/2010 SH&S; 07/2019 GW, 7/2023 GW