

California State University
Long Beach

Heat Illness Prevention Program

For Compliance with:
California Code of Regulations,
Title 8
General Industry Safety Orders
Section 3395



Revised

July 1, 2022

*Office of
Environmental, Health and Safety*

Heat Illness Prevention Program



California State University, Long Beach

Heat Illness Prevention Program
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I. Introduction

Heat illness has long been recognized as a potential work hazard in California and across the nation. All heat related illnesses are preventable. Cal/OSHA requires employers in California to train all employees who work in outdoor environments regarding heat-related hazards and heat illness prevention. The standard also requires the university to have a written plan to inform employees, supervisors, and managers of the regulatory requirements the university must adhere to related to heat illness prevention.

The primary goal of the CSULB Heat Illness Prevention plan is employee safety. The training and operational elements found in this plan will provide employees, managers and supervisors with the tools necessary to anticipate environmental conditions that contribute to heat-related illness, to recognize when work assignments place employees at risk and what job instructions need to be communicated to employees regarding the prevention of heat-related illness.

This plan is consistent with the requirements of the University's Injury and Illness Prevention Plan (IIPP), and nothing in this program supersedes or nullifies the requirements found in our IIPP.

II. Definitions

"Acclimatization" means 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.

"Active Cooling Equipment" – Clothing or powered devices (passive or active) that work to provide body core cooling when worn by an employee.

"Heat Illness" means 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" means 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.

"Environmental risk factors for heat illness" means 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.

"Full-body Protective Clothing" – means clothing or a protective suit that can provide a protective barrier to prevent dermal contact with a full range of materials from ordinary non-hazardous soiling agents to aggressive hazardous material/chemical substances. This suit provides body protection including head (hood) and feet (integrated booties).

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“Landscaping” means 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” means factors such as an individual’s age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body’s water retention or other physiological responses to heat.

“Preventative recovery period” means a period of time to recover from the heat in order to prevent heat illness.

“Shade” means 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” means 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 from direct contact by sunlight while taking the measurement, e.g., with the hand or some other object.

III. Program Scope

In accordance with California Code of Regulations, Title 8, Section 3395- Heat Illness Prevention in Outdoor Places of Employment, CSULB shall establish, implement, and maintain effective procedures for complying with each requirement of this standard. The plan shall be in writing in both English and the language understood by the majority of the employees and shall be made available at the worksite to employees and to representatives of the Division upon request.

The Heat Illness Prevention Plan contains the following elements:

- (1) Procedures for the provision of water and access to shade.
- (2) High heat procedures.
- (3) Emergency Response Procedures
- (4) Acclimatization methods and procedures.

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The CSULB Heat Illness Prevention Plan (HIPP) is intended to control occurrence of heat-related illness. The Plan applies to all outdoor areas of the campus where employees can be assigned work, and where environmental conditions cannot be mitigated by engineering controls.

Additionally, the HIPP also applies to employees who work near sources of heat or inside buildings with limited cooling capabilities, such as warehouses, greenhouses, boiler rooms, etc. The Plan is also applicable to university emergency response personnel, or other employees who are required to wear and perform work in full body personal protective suits, regardless of exterior or interior ambient temperatures.

IV. Responsibilities

Environmental, Health and Safety (EHS) shall:

- Draft and distribute the HIPP to campus managers, supervisors, deans, and directors.
- Provide initial training in the requirements of the plan to campus managers, supervisors, deans and directors who are covered by the requirements of this program.
- Maintain employee training records for courses conducted by EHS staff.

Managers, supervisors, deans, and directors shall:

- Ensure that employee work assignments both indoors and outdoors are evaluated and the components of this plan are implemented when the established temperature/relative humidity thresholds are met or exceeded.
- Ensure that initial and periodic training is provided to employees under their supervision and are consistent with the requirements of this document.
- Ensure that active or passive cooling equipment is available to employees who may require its use.
- Maintain employee training records for courses conducted management personnel.

Employees shall:

- Comply with the requirements of this program.
- Understand the responsibilities of both the university and employees in maintaining compliance with this program.
- Take steps to mitigate any personal risk factors that may exist prior to working in a regulated hot environment.
- Immediately report unsafe conditions to their supervisor.
- Observe their fellow employees for signs of heat-related illness, and take quick action to ensure that rapid assistance is provided if applicable.

V. Procedures

Note: Nothing in this program prevents a manager or supervisor from encouraging good heat-related work practices when local temperatures are hot but do not reach the thresholds detailed below.

Managers and supervisors shall ensure that they are aware of the most current and accurate meteorological information (ambient temperature and relative humidity) in areas of the campus where they will be assigning employees to work. The manager and/or supervisor shall implement the proper controls when local weather conditions have achieved, or are expected to achieve the following threshold:

- ***When the outdoor temperature in the work area exceeds 80° F***

Note: Managers and supervisors may consult the following web page for accurate information regarding weather within the local campus vicinity:

<http://www.wunderground.com/cgi-bin/findweather/getForecast?query=33.784302,-118.115700&sp=KCALONGB3>

1. Water Provision

- (a) Employees shall have access to potable drinking water meeting the requirements of Section, as applicable, including but not limited to the requirements that it be fresh, pure, suitably cool, and provided to employees free of charge. The water shall be located as close as practicable to the areas where employees are working. Where drinking water is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for drinking for the entire shift. Employers may begin the shift with smaller quantities of water if they have effective procedures for replenishment during the shift as needed to allow employees to drink one quart or more per hour. The frequent drinking of water, as described in Section VI., subsection 1. (c), shall be encouraged. For more information, please refer to Appendix B- Hydration Techniques.

2. Access to shade

Shade shall be present when the temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work area exceeds 80 degrees Fahrenheit, the employer shall have and maintain one or more areas with shade at all times while employees are present that are either open to the air or provided with ventilation or cooling. The amount of shade present shall be at least enough to accommodate the number of employees on recovery or rest periods, so that they can sit in a normal posture fully in the shade without having to be in physical contact with each other. The shade shall be located as close as practicable to the areas where

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employees are working. Subject to the same specifications, the amount of shade present during meal periods shall be at least enough to accommodate the number of employees on the meal period who remain onsite.

- (a) Shade shall be available when the temperature does not exceed 80 degrees Fahrenheit. When the outdoor temperature in the work area does not exceed 80 degrees Fahrenheit employers shall either provide shade as per subsection (1) above or provide timely access to shade upon an employee's request.
- (b) Employees shall be allowed and encouraged to take a preventative cool-down rest in the shade when they feel the need to do so to protect themselves from overheating. Such access to shade shall be permitted at all times. An individual employee who takes a preventative cool-down rest shall:
 - (1) Be monitored and asked if he or she is experiencing symptoms of heat illness;
 - (2) Be encouraged to remain in the shade; and
 - (3) Not be ordered back to work until any signs or symptoms of heat illness have abated, but in no event less than 5 minutes in addition to the time needed to access the shade.
 - (4) If an employee exhibits signs or reports symptoms of heat illness while taking a preventative cool-down rest or during a preventative cool-down rest period, the supervisor shall provide appropriate first aid or emergency response according to subsection 4. Below.

Exceptions to subsections (a) and (b) above:

Where CSULB can demonstrate that it is infeasible or unsafe to have a shade structure, or otherwise to have shade present on a continuous basis, CSULB may utilize alternative procedures for providing access to shade if the alternative procedures provide equivalent protection.

Cooling measures other than shade (e.g., use of misting machines) may be provided in lieu of shade if CSULB can demonstrate that these measures are at least as effective as shade in allowing employees to cool.

3. High-Heat Procedures

CSULB managers and supervisors shall implement high-heat procedures when the temperature equals or exceeds **95** degrees Fahrenheit. To the extent practicable, these procedures shall include the following:

- (a) Ensuring that effective communication by voice, observation, or electronic means is maintained so that employees at the work site can contact a supervisor when necessary. An electronic device, such as a cell phone or text messaging device, may be used for this purpose only if reception in the area is reliable.

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- (b) Observing employees for alertness and signs or symptoms of heat illness. The direct supervisor shall ensure effective employee observation/monitoring by implementing one or more of the following:
 - (1) Supervisor or designee observation of 20 or fewer employees, or
 - (2) Mandatory buddy system, or
 - (3) Regular communication with sole employee such as by radio or cellular phone, or
 - (4) Other effective means of observation.
- (c) Designating one or more employees at each worksite as authorized to call for emergency medical services, and allowing other employees to call for emergency services when no designated employee is available.
- (d) Reminding employees throughout the work shift to drink plenty of water.
- (e) Pre-shift meetings before the commencement of work to review the high heat procedures, encourage employees to drink plenty of water, and remind employees of their right to take a cool-down rest when necessary.

4. Emergency Response Procedures

CSULB managers and supervisors shall implement effective emergency response procedures including:

- (a) Ensuring that effective communication by voice, observation, or electronic means is maintained so that employees at the work site can contact a supervisor or emergency medical services when necessary. An electronic device, such as a cell phone or text messaging device, may be used for this purpose only if reception in the area is reliable. If an electronic device will not furnish reliable communication in the work area, the employer will ensure a means of summoning emergency medical services.
- (b) Responding to signs and symptoms of possible heat illness, including but not limited to, first aid measures and how emergency medical services will be provided. At a minimum, the emergency procedures shall contain the following elements:
 - (1) If a supervisor observes, or any employee reports, any signs or symptoms of heat illness in any employee, the supervisor shall take immediate action commensurate with the severity of the illness.
 - (2) If the signs or symptoms are indicators of severe heat illness (such as, but not limited to, decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior or convulsions), the employer must implement emergency response procedures.

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- (3) An employee exhibiting signs or symptoms of heat illness shall be monitored and shall not be left alone or sent home without being offered onsite first aid and/or being provided with emergency medical services in accordance with the employer's procedures.
- (4) Contacting emergency medical services and, if necessary, transporting employees to a place where they can be reached by an emergency medical provider.
- (5) Ensuring that, in the event of emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders.

For more information, please refer to Appendix A- Heat-Related Emergencies Procedure.

5. Acclimatization

- (a) All employees shall be closely observed by a supervisor or designee during a heat wave.
- (b) An employee who has been newly assigned to a high heat area shall be closely observed by a supervisor or designee for the first 14 days of the employee's employment.

6. Work in Indoor Work Environments

Employees who work near sources of heat or inside buildings with limited cooling capabilities, such as warehouses without air conditioning, boiler rooms, greenhouses, etc., can also experience a heat-related illness.

Indoor work environment heat illness prevention steps include the following:

- (a) **Frequent Drinking of Water:** Water is a key preventive measure against heat illness. Managers/supervisors need to facilitate and encourage the frequent drinking of water, and to be on the lookout for work situations that interfere with access to water, especially during a heat wave!
- (b) **Resting in Cooler Areas:** Rest breaks provide time for cooling and the opportunity to drink water. Workers must have access to rest breaks in cooled or air conditioned areas and away from the sources of heat, particularly during a heat wave!
- (c) **Acclimatization and Weather Monitoring:** Acclimatization is a gradual and temporary adjustment of the body to work in the heat. People need several days to adjust when working conditions are significantly hotter than they are used to. The weather is another significant factor and requires monitoring by managers and supervisors. Institute additional water and rest breaks during a heat wave. Indoor workers face a higher risk of heat illness during periods of high temperatures, if they are working in a building that is not temperature controlled.

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- (d) **Being Prepared for Emergencies:** Written procedures must include steps to be followed in an emergency, which will ensure a rapid effective response, including instructing workers on how to reach 911 despite possible language barriers, how to give instructions to find the worksite and how to administer first aid while an ambulance is in route (see Appendix A).
- (e) **Employee and Supervisor Training:** All employees and supervisors need to know about the importance of frequent drinking of water and resting in cooled areas, the signs and symptoms of heat illness, how to respond and who to report to when someone feels sick and may need to go to the hospital.

For more information, please refer to Appendix E- Cal/OSHA Heat Illness Prevention for Indoor Work Environments handout.

7. Work in Full- Body Protective Clothing (FBPC)

FBPC is used on this campus for non-routine emergency response to hazardous materials releases and for routine maintenance/construction – related tasks.

- ➔ When an employee wishes to wear a full – body protective suit (Tyvek, breathable Kleenguard, etc.) to **solely** prevent soiling street clothing from a routine work assignment, and no exposure to hazardous materials is anticipated, and the temperature is not expected to meet or exceed the HIPP action thresholds, the manager and/or supervisor shall comply with the following:
- Employees shall be advised to pre-hydrate before donning suit and beginning work.
 - Employees shall be advised to continue drinking sufficient water to maintain a hydration rate of one 500ml bottle of water per hour.
 - Employees shall be instructed to get out of the direct sun, and into a shaded area, for at least 5 minutes every hour.
- ➔ When emergency conditions are present and the responders are required to protect themselves from any chemical, physical or biological hazard, the following work practices shall be implemented (by properly and currently trained staff):
- Supervisors shall ensure that active cooling equipment is available for employee use, and that employees have been trained in the use of the equipment prior to work assignment.
 - Supervisors shall limit work assignments for employees to allow sufficient rest time for fluid replacement and restoration of nominal vital signs.
 - Every effort shall be made to schedule work in the coolest part of the day, usually early morning, to mitigate the need for active cooling equipment.
 - If conditions do not permit off hours scheduling, supervisors shall ensure that baseline vital signs for employees shall not exceed established thresholds (see Appendix D-Baseline Vital Sign Thresholds).

VI. Training

(1) Employee Training

Effective training in the following topics shall be provided to each supervisory and non-supervisory employee before the employee begins work that should reasonably be anticipated to result in exposure to the risk of heat illness:

- (a) The 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.
- (b) CSULB's procedures for complying with the requirements of this standard, including, but not limited to, CSULB's responsibility to provide water, shade, cool-down rests, and access to first aid as well as the employees' right to exercise their rights under this standard without retaliation.
- (c) The importance of frequent consumption of small quantities of water, up to 4 cups per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties (refer to Appendix B).
- (d) The concept, importance, and methods of acclimatization pursuant to CSULB's procedures under section V. 5. above.
- (e) The different types of heat illness, and the common signs and symptoms of heat illness, and appropriate first aid and/or emergency responses to the different types of heat illness, and in addition, that heat illness may progress quickly from mild symptoms and signs to serious and life threatening illness.
- (f) The importance of immediately reporting to the direct supervisor symptoms or signs of heat illness in themselves, or in co-workers.
- (g) CSULB's procedures for responding to signs or symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary (refer to Appendix A).
- (h) CSULB's 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 (refer to Appendix A).
- (i) CSULB's procedures for ensuring that, in the event of emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders. These procedures shall include designating a person to be available to ensure that emergency procedures are invoked when appropriate (refer to Appendix A).

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While it is not intended to be a substitute for formal heat illness prevention training, Appendix C- Heat Illness Prevention Pocket Guide is a useful tool to remind supervisors and employees of the importance to take all necessary steps in order to prevent heat-related illnesses.

(2) Supervisor Training

Prior to supervising employees performing work that should reasonably be anticipated to result in exposure to the risk of heat illness, effective training on the following topics shall be provided to the supervisor:

- (a) The information required to be provided by subsection (1) above.
- (b) The procedures the supervisor is to follow to implement the applicable provisions in this section.
- (c) The procedures the supervisor is to follow when an employee exhibits signs or reports symptoms consistent with possible heat illness, including emergency response procedures.
- (d) How to monitor weather reports and how to respond to hot weather advisories.

APPENDIX A

California State University, Long Beach
Office of Environmental Health & Safety

Heat-Related Emergencies Procedures



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Working in Southern California in the summer and early fall months can expose employees to relatively high temperatures, and at times high humidity. When these two environmental factors are combined, they can create an increased risk of heat-related illness. The following information is presented to inform employees regarding the types of heat related illness, how to avoid being affected by the heat, and what to do in case a heat-related emergency occurs.

Normally, the body regulates internal temperature by letting heat escape through the skin and by evaporating sweat (perspiration). If the body does not cool properly or does not cool enough, the victim may suffer a heat-related illness. Anyone can be susceptible, although the very young and very old are at greater risk. Heat-related illnesses can become serious or even deadly if unattended.



Definitions

- Heat Wave:** More than 48 hours of high heat (90F or higher) and high humidity (80 percent relative humidity or higher) are expected.
- Heat Index:** A number in degrees Fahrenheit that tells how hot it really feels with the heat and humidity. Exposure to full sunshine can increase the heat index by 15°F.
- Heat cramps:** Heat cramps are muscular pains and spasms due to heavy exertion. They usually involve the abdominal muscles or the legs. It is generally thought that the loss of water and salt from heavy sweating causes the cramps.
- Heat Exhaustion:** Heat exhaustion is less dangerous than heat stroke. It typically occurs when people exercise heavily or work in a warm, humid place where body fluids are lost through heavy sweating. Fluid loss causes blood flow to decrease in the vital organs, resulting in a form of shock. With heat exhaustion, sweat does not evaporate as it should, possibly because of high humidity or too many layers of clothing. As a result, the body is not cooled properly. Signals include cool, moist, pale, flushed or red skin; heavy sweating; headache; nausea or vomiting; dizziness; and exhaustion. Body temperature will be near normal.
- Heat Stroke** Also known as sunstroke, heat stroke is life-threatening. The victim's temperature control system, which produces sweating to cool the body, stops working. The body temperature can rise so high that brain damage and death may result if the body is not cooled quickly. Signals include hot, red and dry skin; changes in consciousness; rapid, weak pulse; and rapid, shallow breathing. Body temperature can be very high—sometimes as high as 105°F.

Stages of Heat-Related Illness

Heat-related illness usually comes in stages. The signal of the first stage is heat cramps in muscles. These cramps can be very painful. If you are caring for a person who has heat cramps, have him or her stop all activity and rest. If the person is fully awake and alert, have him or her drink small amounts of cool water or a commercial sports drink containing electrolytes. Gently stretch the cramped muscle and hold the stretch for about 20 seconds, then gently massage the muscle. Repeat these steps if necessary. If the victim has no other signals of heat-related illness, the person may resume activity after the cramps stop.

The signals of the next, more serious stage of a heat-related illness (often called heat exhaustion) include:

- Cool, moist, pale skin (the skin may be red right after physical activity).
- Headaches
- Dizziness and weakness or exhaustion

- Nausea
- The skin may or may not feel hot.

Symptoms of late stage heat-related illness (often called heat stroke) include:

- Vomiting.
- Decreased alertness level or complete loss of consciousness.
- High body temperature (sometimes as high as 105F).
- Skin may still be moist or the victim may stop sweating and the skin may be red, hot and dry.
- Rapid, weak pulse.
- Rapid, shallow breathing.

This late stage of a heat-related illness is life threatening. If you are on campus property, **call 9-1-1 immediately from any landline. If calling on a cell phone, call University Police at (562) 985-4101.**

General Care for Heat-Related Emergencies

1. Cool the Body
2. Give Fluids
3. Minimize Shock

For Heat cramps or Heat Exhaustion:

- Move the person to a cooler place and have him/her rest in a comfortable position.
- If the person is fully awake and alert, give a half glass of cool water every 15 minutes. Do not let him/her drink too quickly. Do not give liquids with alcohol or caffeine in them, as they can worsen the condition.
- Remove or loosen tight clothing and apply cool, wet cloths such as towels or wet sheets.
- **If the person refuses water, vomits or loses consciousness, call 9-1-1 immediately from any landline. If calling on a cell phone, call University Police at (562) 985-4101.**

For Heat Stroke:

- Call **9-1-1** immediately from any landline. If calling on a cell phone, call University Police at **(562) 985-4101**.
- Move the person to a cooler place.
- Place the person flat on the floor, with arms and legs spread slightly apart.
- Quickly cool the body. Wrap wet sheets around the body and fan it. If you have ice packs or cold packs, wrap them in a cloth and place them on each of the victim's wrists and ankles, in the armpits and on the neck to cool the large blood vessels. (Do not use rubbing alcohol because it closes the skin's pores and prevents heat loss.)
- Watch for signals of breathing problems and ensure that the airway is clear.

Tips For Preventing Heat-Related Illness

Prevention of heat related illness is preferred to treatment of patients with heat-related illness. The types of preventative measures employees can take to reduce the risk of a heat related illness include:

- Dress for the heat. Wear lightweight, light-colored clothing. Light colors will reflect away some of the sun's energy. It is also a good idea to wear hats or to use an umbrella.
- Drink water. Carry water or juice with you and drink continuously even if you do not feel thirsty. Avoid alcohol and caffeine, which dehydrate the body.
- Eat small meals and eat more often. Avoid foods that are high in protein which increase metabolic heat.
- Avoid using salt tablets unless directed to do so by a physician.
- Slow down. Avoid strenuous activity. If you must perform any strenuous activity, do it during the coolest part of the day, which is usually in the morning between 4:00 a.m. and 7:00 a.m.
- Stay indoors when possible. Take regular breaks when engaged in physical activity on warm days. Take time out to find a cool place. If you recognize that you, or someone else, is showing any symptom of a heat-related illness, immediately stop the activity and find a cool place.

Detailed information regarding heat-related illness can be obtained in the following web sites:

<https://www.dir.ca.gov/dosh/heatillnessinfo.html>

<http://www.cdc.gov/niosh/docs/86-112/>