

Heat Illness Prevention Program

California State University, Long Beach

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Safety, Risk Management and Information Security

Heat Illness Prevention Program

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Heat Illness Prevention

Introduction

Heat illness in all its forms has always been a recognized work hazard in California, and across the nation. All heat related illnesses are preventable. Cal/OSHA requires employers in California to train workers regarding the hazards of working in heat and in heat related illness. The standard also requires the university to have a written plan that informs employees, supervisors, and managers of the regulatory requirements the university must adhere to related to heat related 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.

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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.

"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).

"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.

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Program Scope

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 Plan also applies to indoor areas where employees may be assigned work, where the indoor temperature meets or exceeds 100° F. 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.

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Program Responsibilities

Safety, Risk Management, and Information Security (SRMIS) will:

- 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, and employees who are covered by the requirements of this program.
- maintain employee training records for courses conducted by SRMIS staff.

Managers, supervisors, deans, and directors will:

- 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 it's use.
- maintain employee training records for courses conducted solely by Facilities Management personnel.

Employees will:

- comply with the requirements of the this plan.
- understand the responsibilities of both the university and employees in maintaining compliance with this plan.
- 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.

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Training

California Code of Regulations, Title 8, Chapter 4, section 3395 requires employers to provide training in the provisions of the written Heat Illness Prevention Plan to managers and supervisors, and employees. The minimum requirements for training content include:

- The environmental and personal risk factors for heat illness;
- CSULB's procedures for complying with the requirements of CCR, T8, section 3395;
- The importance of frequent consumption of small quantities of water, up to four (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;
- The importance of acclimatization (refer to Appendix A);
- The different types of heat illness and the common signs and symptoms of heat illness (refer to Appendix A);
- The importance to employees of **immediately** reporting to the employer, directly or through the employee's supervisor, symptoms or signs of heat illness in themselves, or in co-workers;
- CSULB's procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary (refer to Appendix A);
- 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);
- CSULB's procedures for ensuring that, in the event of an emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders (refer to Appendix A).

Further, supervisors are required to receive the same training content as outlined above and in addition:

- The procedures the supervisor is to follow to implement the applicable provisions in this section.
- The procedures the supervisor is to follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.

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Program Compliance Strategy

Nothing in this plan 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.

Outdoor Work Assignments

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:

- ***more than 48 hours with day time temperatures at or above 90° F and relative humidity at or above 80%.***

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

http://mysite.verizon.net/res0cjap/Current_Vantage_Pro.htm

In these conditions, the manager and/or supervisor shall implement the following worker protection controls.

- Prior to the start of the work shift, when weather conditions require the application of the HIPP, managers and/or supervisors shall meet with their employees, and review the work procedures to be used during the high heat period.
- Managers and/or supervisors shall ensure that exposed employees have access to cool potable drinking water. Water must be provided to employees at the beginning of the work shift in sufficient quantities to ensure that employees can consume one quart of potable water per hour.
- Employees may be provided with smaller quantities of water if provisions are made to supply one quart of water per hour per employee.
- Managers and/or supervisors shall encourage frequent drinking of water by employees.
- Managers and/or supervisors shall ensure that employees assigned work outdoors and exposed to high environmental temperatures shall have quick and effective access to a rest area where shade is available, or to an area where ventilation or cooling is provided for a period of not

less than 5 minutes. Employees shall have access to shade or cooling at all times during the work shift.

Work Assignments in Indoor Environments

Where employees are assigned work in an indoor environment where ambient temperatures will meet or exceed 100° F, managers and supervisors will ensure that :

- Prior to the start of the work shift, when interior environmental conditions require the application of the HIPP, managers and/or supervisors shall meet with their employees, and review the work procedures to be used during the high heat period.
- Managers and/or supervisors shall ensure that exposed employees have access to cool potable drinking water. Water must be provided to employees at the beginning of the work shift in sufficient quantities to ensure that employees can consume one quart of potable water per hour.
- Employees may be provided with smaller quantities of water if provisions are made to supply one quart of water per hour per employee.
- Managers and/or supervisors shall encourage frequent drinking of water by employees.
- Managers and/or supervisors shall ensure that employees assigned work outdoors and exposed to high environmental temperatures shall have quick and effective access to a rest area where shade is available, or to an area where ventilation or cooling is provided for a period of not less than 5 minutes. Employees shall have access to shade or cooling at all times during the work shift.

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).

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Appendix A

Recognizing Health Related Illness – Definitions, Signs, Symptoms , and Emergency Care Emergency Services Contact and Location Procedures

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Appendix A -

Definitions and Symptoms of Heat Related Illness/ Emergency Services Contact Procedures

Emergency Services Contact Procedures

When an employee has been impacted with a heat related illness, or any emergent medical condition, CSULB has the following process in place:

1. When an employee appears to be suffering from a heat related illness, contact 9-1-1 immediately. Use a public telephone, an available campus telephone, a campus cellular telephone, or a private cellular telephone. At CSULB all 9-1-1 calls for emergency service (including most cellular telephone calls) are received by University Police Dispatch. Advise Dispatch that an employee is suffering from a heat related emergency. Do not hang up; the University Police Dispatched will require further information from the calling party.
2. If the affected employee is able to walk, get them out of the sun, begin active cooling, and advise University Police Dispatch of the patient's location on campus. Be as precise as possible. If the dispatcher requests that the employee be moved to a campus location that is easier for emergency services (Police and Fire/EMS responders) to access, advise the dispatcher if you think that can be done without further injury.
3. If the patient cannot be re-located, provide University Police Dispatch with the precise campus location. If other employees or campus occupants are available, direct them to the nearest campus street to assist in directing emergency services to the patient.

The CSULB HIPP uses definitions and treatment modalities promulgated the American Red Cross curriculum First Aid/CPR/AED for the Workplace -2007. The following information is collected from that source.

Types of Heat Related Illness –

- Heat Cramps – are painful muscle spasms that usually occur in the legs (hamstrings) and abdomen. Heat cramps are treatable, and are the least severe form of heat related illness.
- Heat Exhaustion (heat syncope) – is an early indicator that the body's cooling system is becoming overwhelmed. Signals of heat exhaustion include:
 - Cool, moist, pale, ashen or flushed skin.
 - Headache, nausea, dizziness.
 - Weakness, exhaustion

- Heavy sweating (a capstone sign)
- Heat Stroke – is a profound medical emergency. Heat stroke occurs when the body's systems are overwhelmed by heat and stop functioning. Heat stroke is a life threatening condition and requires professional emergency medical intervention. Signals of heat stroke include:
 - Red, hot, dry skin.
 - Changes in the level of consciousness (LOC)
 - Vomiting

First Aid Care for Victims of Health Related Illness

For employees suffering from heat cramps or heat exhaustion:

- Move the employee out of the sun, to a cool shaded place.
- Loosen tight or restrictive clothing, and remove any personal protective equipment over garments.
- Remove perspiration soaked clothing.
- Apply cool, wet towels to the skin
- Fan the employee gently
- If the person is conscious, provide small sips of cool water, (not a sports drink)

For employees suffering from heat stroke:

- **This is a profound medical emergency, and cannot be successfully treated in the field. Immediate and decisive action is required.**
- Call 9-1-1 or 985-4101 and advise University Police Dispatch of the situation. Ensure that accurate directions are provided to University Police so medical assistance is not delayed.
- Move the employee to a place out of the sun, or provide shade for them.
- Loosen tight clothing, and begin active cooling methods (active fanning, pouring cool water over the body core, placing ice packs in the arm pits, behind the neck, and in the groin.
- Place the employee on their back (supine position) and gently roll them onto their side, with their airway (mouth) pointed down toward the ground in the recovery (Haines) position. Maintain an open airway!
- Continue to cool the person by using ice or cold packs on the employee's wrists, ankles, groin, neck, and armpits.
- Remain with the employee until medical assistance arrives, and provide assistance to responders as required.

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Appendix B

Hydration Techniques

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Appendix B – Hydration Techniques

For most employees who are well acclimated to exterior conditions in the work environment, proper hydration is a simple matter of drinking sufficient potable water prior to exposure to heat, and at least one quart per hour of cool potable water during the work involving exposure to high heat. **Drink before you get thirsty.** If you are working in high heat conditions, and become thirsty, you cannot replace the fluid loss you have sustained orally.

To re-state what Cal/OSHA recommends, an employee must consume up to four (4) cups per hour of cool, potable water during work in high heat conditions. For reference, a 500 ml bottle of commercially available water is equal to approximately two (2) cups of water. Thus, consuming two (2) 500ml bottles of water per hour would be equal to 4 cups.

Preventing heat related illness in employees is preferable to responding to a victim of heat illness. It is very important to “pre-hydrate” prior to beginning work in a high heat environment. If possible, employees should consume at least one bottle of water, or 2 cups, before beginning work in a high heat environment.

The Cal/OSHA standard requires employers to provide potable, “cool” water for employees. For reference, university public drinking fountains that are not electrically refrigerated provide water at between 75 ° F and 76 ° F. If supervisors choose to supply drinking water out of insulated water coolers, the contents needs to be kept at that relative temperature. Additionally, if a water cooler is provided, it must be sanitary, and have a valve for dispensing the water into individual cups, one for each employee, or disposable cups. The use of a communal dipper is not permitted.

The use of **salt pills**, or **electrolyte replacement “sports” drinks** is not recommended for normal hydration and fluid replacement. Water is the preferred fluid, taken in the amounts discussed. Do not over-hydrate, or try to consume more than the recommended amount and rate. Water intoxication can occur, where so much water is ingested that electrolyte balance is disturbed, which can lead to heart arrhythmias and other circulation problems.

In summary, anticipate high heat conditions, ensure that heat illness risk factors are eliminated or controlled, pre-hydrate before beginning work in high heat and humidity, and consume at least four (4) cups of water per hour during work in high heat.

Know the signs and symptoms of heat related illness. Keep an eye on co-workers, and respond quickly when you see signs of heat related illness in others.

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Appendix C

Cal/OSHA Flyer on Heat Related Illness (English and Spanish)

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PROTECT YOURSELF FROM HEAT ILLNESS

In a one-year investigation of 25 cases of suspected heat-related illnesses, Cal/OSHA found that more than half of the heat illness victims died, and almost one-third of them required hospitalization. Heat illness can kill you. During hot weather you must take the simple steps outlined here to protect yourself.



WHAT CAUSES HEAT ILLNESS?

Heat illness occurs when your body keeps in more heat than it loses and your temperature rises. You are at greater risk of heat illness when you:

- Are dehydrated. Dehydration is your worst enemy during hot weather.
- Are not used to working in the heat.
- Are in poor health.
- Have had heat illness before.

WHAT YOU CAN DO TO PREVENT HEAT ILLNESS

Your two best defenses against the heat are:

- Getting out of the sun or finding a cool resting place when you are starting to overheat and need to cool down.



OTHER THINGS YOU CAN DO

- Drinking cool, fresh water throughout the day (four 8-oz cups per hour). That is how much water your body loses just by sweating. Don't wait until you are thirsty to drink.



- Tell your supervisor immediately if you think you are getting sick from the heat.
- Know the location(s) of your closest drinking water supplies.
- Choose water over sodas and other drinks containing caffeine or sugar.

YOUR RIGHTS

- Keep track of your coworkers. You all need to watch out for each other. If anyone looks like they are not okay, check them out.
- After work take a cold bath or shower.

YOUR RIGHTS

If you are working outdoors, by law, your employer must guarantee you all of the following:

- access to fresh, cool drinking water throughout the day.
- access to shade (all employees) or an equally cool spot (if you are not an agricultural worker) for 5 minutes at a time to rest and cool down.
- training on how to work safely in the heat, including how to call for emergency services if someone is overcome by the heat.

For more information, call

1-800-963-9424



Heat illness can be one or more serious medical conditions like heat cramps, fainting, heat exhaustion and heatstroke.

WHAT IS HEAT ILLNESS?

Your two best defenses against the heat are:

- Getting out of the sun or finding a cool resting place when you are starting to overheat and need to cool down.

- Tell your supervisor immediately if you think you are getting sick from the heat.
- Know the location(s) of your closest drinking water supplies.
- Choose water over sodas and other drinks containing caffeine or sugar.

- You are better off avoiding alcohol altogether. The more you drink, even beer, the more dehydrated you will get.
- Always know who and how to call for help when you start a new work day.
- Know the symptoms to watch for:
 - discomfort, excessive sweating, headache, poor concentration, muscle pain, cramping, dizziness, fatigue, irritability, loss of coordination, throwing-up, blurry vision, confusion, lack of sweating, fainting, seizures.
- If you are new to working in the heat, tell your employer. Your employer should have procedures to allow you to adjust during your first two weeks of hot weather work.
- Get your doctor's advice if you know you have risk factors for heat illness, such as:
 - illnesses like diabetes
 - taking medications or over-the-counter drugs
 - being on a low salt diet

PROTEJASE DE LAS ENFERMEDADES CAUSADAS POR EL CALOR

En la investigación de un año, de 25 casos, en que se sospecha que fueron ocasionados por las enfermedades causadas por el calor, CALORSHA encontró que más de la mitad de las víctimas, murieron y casi un tercio de ellas ingresaron a hospitalización. Las enfermedades causadas por el calor pueden matar. En clima caliente, tome las siguientes precauciones:



QUE OCASIONAN LAS ENFERMEDADES CAUSADAS POR EL CALOR?

Las enfermedades causadas por el calor ocurren cuando su cuerpo produce y conserva más calor que lo que pierde, elevando su temperatura. Usted está en gran riesgo de sufrir enfermedades causadas por el calor cuando:

- Se deshidrata. La deshidratación es su peor enemigo durante el clima caliente.
- No está acostumbrado a trabajar en el calor.
- Se encuentra en condiciones de mala de salud.
- Anteriormente ha sufrido de enfermedades causadas por el calor.

COMO PUEDE PREVENIR ESTAS ENFERMEDADES

Sus dos mejores defensas contra el calor son:

- Buscar un lugar sombreado y fresco para descansar cuando se sienta sobrecalentado y necesite enfriarse.



En clima caliente, beber agua fresca durante todo el día (cuanto vasos de 8 onzas de agua por hora). Esta es la cantidad de agua que su cuerpo pierde cuando suda. No espere a sentir sed para beber agua.



OTRAS COSAS QUE USTED PUEDE HACER

- De inmediato informe a su supervisor si usted piensa que se está enfermando a causa del calor.
- Segue donde estén las provisiones de agua más cercanas a usted.
- Elija agua en lugar de sodas u otras bebidas carbonadas o azucaradas.
- Evite tomar bebidas alcohólicas. Cuando más tome, más se deshidrata.

- Cuando empiece un día nuevo de trabajo, siempre seque a quien y como llamar para pedir auxilio.
- Conozca los síntomas a los que debe estar alerta.

- Incomodidad, sudor excesivo, dolor de cabeza, falta de concentración, dolor muscular, calambres, mareos, fatiga, irritabilidad, incoordinación, vómito, visión borrosa, confusión, ausencia de sudor, desmayo y convulsiones.

- Si usted no está acostumbrado a trabajar en temperaturas altas, informe a su supervisor. Su empleador debe tener procedimientos para permitirle que usted se adapte al calor durante las dos primeras semanas de trabajo.
- Consulte a su médico si sabe que tiene cualquier factor de riesgo que cause enfermedades causadas por el calor tales como:
 - enfermedades como la diabetes;
 - tomar medicinas de prescripción o "sin prescripción" médica,
 - una dieta baja en sal

- No pierda de vista a sus compañeros de trabajo. Este atento si usted o uno de sus compañeros no se sienta bien. Si alguno se ve mal, compárebalo como está.
- Después del trabajo, tómese un baño o ducha fría.

SUS DERECHOS

Si usted trabaja al aire libre, por ley, su empleador debe garantizarle todo lo siguiente:

- Acceso a agua fresca de beber durante todo el día.
- Acceso a la sombra (para todos los trabajadores) o a un ambiente igualmente fresco (si usted no es un trabajador agrícola) durante 5 minutos cada vez para descansar y enfriarse.
- Entrenamiento para trabajar de forma segura en el calor incluyendo como llamar a los servicios de emergencia si alguien sucumbe al calor.

Para más información, llame
1-800-963-9424



Appendix D

Baseline Vital Sign Thresholds

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Pre-Entry Medical Monitoring (Hazardous Materials Response)
(After NFPA 471 – 2002)

There are three reasons to conduct medical monitoring on employees designated to wear FBPC and enter an area contaminated by a hazardous materials release:

1. To establish baseline vital signs and physical assessment (for comparison with post entry physical conditions.)
2. To identify and preclude from participation in the hot zone and warm zone activities individuals at increased risk for sustaining injury and illness as a result of on-scene activities.
3. To provide early recognition and treatment of personnel with adverse physiological responses as a result of on-scene activities.

The following orthostatic vital sign thresholds are pre-entry maximum values. Employees who exceed any of these values must not be assigned to work in FBPC.

Physical Signs That Disqualify Employees From Wearing FBPC:

1. **Blood pressure — diastolic greater than 105 mm Hg**
2. **Pulse — greater than 70 percent of the maximum heart rate (220 - age)**
3. **Respiratory rate — greater than 24 per minute**
4. **Temperature — greater than 99.5°F (oral) or greater than 100.5°F (core) or less than 97.0°F (oral) or less than 98.0°F (core).**
5. **Skin evaluation — open sores, large area of rash or significant sunburn.**

Managers and/or supervisors (*Hazardous Materials Team Leaders*) shall obtain these readings, and record them in the appropriate position on the Site Safety Plan (Hazardous Materials Contingency Plan).

Managers and/or supervisors (*Hazardous Materials Team Leaders*) shall obtain post entry vital signs and skin evaluations, and shall record them in the appropriate position on the Site Safety Plan. **Hazardous materials team members who have exited the hot and warm zones and been decontaminated shall have at least as much recovery time as suit time.**