

Outdoor Heat Illness Prevention

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**California State Polytechnic University, Pomona
Environmental Health & Safety Department**

Outdoor Heat Illness Prevention

1.0 REFERENCE

Section 3395, Title 8, California Code of Regulations (see Appendix A)

2.0 POLICY

It is the policy of California State Polytechnic University, Pomona, to maintain, insofar as it is reasonably within the control of the University to do so, a campus environment for students, faculty, staff and visitors that will not adversely affect their health and safety nor subject them to avoidable risks of accidental injury. No individual or employee shall be required to perform any task, which is determined to be unsafe or unreasonably hazardous. Furthermore, the University shall ensure that all operational activities are carried out in compliance with existing environmental laws, rules, regulations, and campus policies, in order to protect the environment.

While the overall responsibility for campus environmental protection, health and safety belongs to the University, the primary responsibility lies with each manager at the department level, under the broad direction of each vice president. Everyone has a personal responsibility for prevention of campus accidents and environmental protection. Accordingly, all faculty and staff are to ensure that safe and healthful conditions and practices are provided and followed in their areas of control, and all members of the campus community are to cooperate fully with all aspects of the University Environmental Health and Safety program.

3.0 PURPOSE

This program establishes the requirements for the prevention, treatment and response for Outdoor Heat Illness. This program applies to departments with employees who work outside during a substantial portion of their work shift. Employees in Landscape Services, Field Workers in Horticulture Plant & Soil Sciences, Coaches in Athletics, Coaches in Kinesiology and Parking Officers in Parking and Transportation Services are examples of employees who work outside a substantial portion of their work shift.

4.0 RESPONSIBILITIES

4.1 Environmental Health & Safety Department

- Develop, implement, and monitor the Program in compliance with Cal-OSHA requirements.
- Provide training as requested.
- Respond to reports of unsafe conditions and work practices and recommend corrective action.
- Maintain records for 3 years.

4.2 Department Utilizing Outdoor Heat Illness Prevention Program

- Identify employees exposed to outdoor heat.
- Ensure employees are trained on the program, heat illnesses and prevention.
- Retain copies of training records for 3 years. Records include: employee's name, training dates, type of training and training provider. Send a copy of the records to EH&S.
- Provide the equipment necessary to adhere to program procedures.
- Comply with the program procedures and ensure that employees adhere to program procedures.

- Ensure that effective communication by voice, observation, or electronic means is maintained at all times so that employees can contact a supervisor, lead or emergency medical services when necessary.

5.0 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.

"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.

"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. Trees, tall bushes, 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 does not deter or discourage access or use.

6.0 TRAINING

Supervisory and non-supervisory employees shall be trained on the following prior to assignment in an outdoor heat environment. Annual refresher training is recommended.

- The environmental and personal risk factors for heat illness;
- The added burden of heat load on the body caused by exertion, clothing and personal protective equipment
- How to monitor weather reports and respond to hot-weather advisories.
- The procedures in this document;
- 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;
- The concept and importance of acclimatization;
- The different types of heat illness and the common signs and symptoms of heat illness (refer to Appendix B);
- The importance to employees of immediately reporting to the supervisor or lead any symptoms or signs of heat illness in themselves, or in co-workers;
- The procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary;
- The procedures for contacting emergency medical services, and for transporting ill employees;
- The 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.

- The University's responsibility to provide water, shade, cool-down rests and access to shade.
- The employees' right to exercise their rights under the Heat Illness Prevention in Outdoor Places of Employment Standard without retaliation.

Supervisory employees shall be trained on the following additional information prior to assignment in an outdoor heat environment.

- 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.

7.0 ACCESS TO DRINKING WATER

Ensure employees have access to potable drinking water free of charge. Water shall be fresh, pure, suitably cool" and located as close as practicable to where employees are working, unless the employer can demonstrate that this is infeasible. Where water is not available via 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 the department has procedures for replenishment during the shift as needed to allow employees to drink one quart or more per hour. The frequent drinking of water shall be encouraged.

8.0 ACCESS TO SHADE

Ensure employees suffering from heat illness or believing a preventative recovery period is needed, have access to an area with shade that is either open to the air or provided with ventilation or cooling for a period of no less than five minutes. Employees taking a "preventative cool-down rest" must be monitored for symptoms of heat illness, asked if he or she is experiencing symptoms of heat illness, encouraged to remain in the shade and not ordered back to work until symptoms are gone. Employees with symptoms will be provided appropriate first aid and/or emergency response. Shade shall be able to accommodate all employees on recovery or rest periods, and those onsite taking meal periods, unless the employer can demonstrate that this is infeasible. Shade must be available and set up at temperatures above 80° Fahrenheit. Employees must have timely access to shade if requested regardless of temperature. Shade should not be located across traffic or a waterway and should not be located in an unhealthy location that could deter or discourage its use. Access shall be permitted at all times. Except for employers in the agricultural industry, cooling measures other than shade (e.g., use of misting machines) may be provided in lieu of shade if the employer can demonstrate that these measures are at least as effective as shade in allowing employees to cool and setting up or providing an area with shade is unsafe.

9.0 RESPONSE TO SYMPTOMS OF HEAT ILLNESS

- Follow the treatment for the type of heat illness listed in Appendix B Heat Illness Information.
- In the event of a Major Heat Stress Disorder, such as Heat Exhaustion/Heat Stroke, or symptoms such as decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior or convulsions contact emergency services immediately (see Section 10.0).
- Campus police officers are trained in first aid and cardio pulmonary resuscitation (CPR). Do not attempt to render first aid unless you have been trained to do so.
- Do not move a seriously injured person, or one who appears to be seriously ill, unless it is a life-threatening situation.
- All on-campus illnesses and injuries, even though minor, must be reported to your immediate supervisor.
- 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.

10.0 CONTACTING EMERGENCY SERVICES

- All employees are designated to contact Emergency Services.
- All employees shall have access to effective communication by voice, observation, or electronic means at all times so that they can contact a supervisor, lead or emergency medical services when necessary.
- To contact Emergency Services, DIAL 911 from a campus phone, 909-869-3070 from a Cell Phone, contact Facilities Customer Service or via radio and have them DIAL 911 or contact Police Dispatch via radio.
- Give your name, location and telephone number, and as much information as possible regarding the nature of the injury or illness, and whether or not the victim is conscious.
- Remain with the victim until help arrives. Keep the ill or injured person as calm and comfortable as possible.
- Follow the first-aid treatment procedures listed in Appendix B or as summarized below.
 - Move victim to shade, if victim cannot be safely moved bring the shade to the victim if feasible.
 - Loosen or remove clothing and boots.
 - Cool the victim as fast as possible.
 - Fan the victim.
 - If necessary, pour water on the victim. Do not use ice water.
 - Elevate the victim's legs and massage the limbs.
 - If conscious, have the victim drink water with salt if possible.
 - Stay with victim until medical attention arrives.
- Know the names of persons in your area or department who are trained in first aid and/ or CPR, should they be needed.

11.0 TRANSPORTATION OF ILL INDIVIDUALS

When notified as mention in Section 8.0, University Police will dispatch Medic 1 or an ambulance to transport ill individuals.

12.0 PROVIDING CLEAR DIRECTIONS TO THE LOCATION OF ILL INDIVIDUALS

When describing the location to emergency responder, give a clear description of the location. Whenever possible reference a building and room number or indicate the location based on the closest buildings or landmarks. Always verify that the emergency dispatcher understands your description of the location.

13.0 HIGH HEAT PROCEDURES

High-heat procedures: When the temperature exceeds 95°F, employers shall:

- Prior to starting the work shift, the Supervisor or Lead will meet with the employees and review high heat procedures, remind them to drink plenty of water and their right to a cool-down period.
- Employees must be provided with a minimum 10-minute cool-down period every two hours.
- Ensure effective observation (see "Close Observation" below in Section 14.0) and monitoring using a mandatory buddy system, regular communication with employees working by themselves or direct supervision of no more than 20 employees by a Supervisor, Lead or designee.
- Maintain communication by voice, observation or electronic means so that employees can contact a supervisor or emergency medical services when necessary.
- Observe employees for alertness and signs or symptoms of heat illness.
- Remind employees throughout the shift to drink water.

14.0 ACCLIMATIZATION PROCEDURES

- Closely supervise new employees for their first 14 days of employment.
- All employees shall be closely observed (see "Close Observation" below) by a supervisor, lead or designee during a heat wave. For purposes of this section only, "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.

- An employee who has been newly assigned to a high heat area (Temperature greater than 95°F) shall be closely observed (see “Close Observation” below) by a supervisor, lead or designee for the first 14 days of the employee's employment.
- Close Observation can be accomplished by any one of the following methods:
 - Use of the Buddy System. Employees work in groups of 2 or more and stay within sight and hearing of each other.
 - Visual Observation of employees by a Supervisor, Lead or designee. No more than 20 employees per Supervisor, Lead or designee.
 - Two way communication by electronic device (e.g. radio, cell phone, etc.). Employees must be contacted every 15 minutes to verify that they are OK (e.g. can count backwards from 10 to 1).

APPENDIX A

HEAT ILLNESS PREVENTION SAFETY ORDERS

California Code of Regulations, Title 8, Section:

3395. Heat Illness Prevention (Effective November 4, 2010).

(a) **Scope and Application.**

(1) This standard applies to all outdoor places of employment.

EXCEPTION: If an industry is not listed in subsection (a)(2), employers in that industry are not required to comply with subsection (e), High-heat procedures.

(2) List of industries subject to all provisions of this standard, including subsection (e):

(A) Agriculture

(B) Construction

(C) Landscaping

(D) Oil and gas extraction

(E) Transportation or delivery of agricultural products, construction materials or other heavy materials (e.g. furniture, lumber, freight, cargo, cabinets, industrial or commercial materials), except for employment that consists of operating an air-conditioned vehicle and does not include loading or unloading.

(3) This section applies to the control of risk of occurrence of heat illness. This is not intended to exclude the application of other sections of Title 8, including, but not necessarily limited to, sections 1230(a), 1512, 1524, 3203, 3363, 3400, 3439, 3457, 6251, 6512, 6969, 6975, 8420 and 8602(e).

NOTE NO. 1: The measures required here may be integrated into the employer's written Injury and Illness Program required by section 3203, or maintained in a separate document.

NOTE NO. 2: This standard is enforceable by the Division of Occupational Safety and Health pursuant to Labor Code sections 6308 and 6317 and any other statutes conferring enforcement powers upon the Division. It is a violation of Labor Code sections 6310, 6311, and 6312 to discharge or discriminate in any other manner against employees for exercising their rights under this or any other provision offering occupational safety and health protection to employees.

(b) **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.

"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.

"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.

"Oil and gas extraction" means operating and/or developing oil and gas field properties, exploring for crude petroleum or natural gas, mining or extracting of oil or gas or recovering liquid hydrocarbons from oil or gas field gases.

“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.

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

(c) Provision of water. Employees shall have access to potable drinking water meeting the requirements of Sections 1524, 3363, and 3457, 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 subsection (h)(1)(C), shall be encouraged.

(d) Access to shade.

(1) 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 shaded area shall be located as close as practicable to the areas where 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.

(2) 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 (d)(1) or provide timely access to shade upon an employee’s request.

(3) 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 (A) shall be monitored and asked if he or she is experiencing symptoms of heat illness; (B) shall be encouraged to remain in the shade; and (C) shall 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 employer shall provide appropriate first aid or emergency response according to subsection (f) of this section.

Exceptions to subsection (d):

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

(2) Except for employers in the agricultural industry, cooling measures other than shade (e.g., use of misting machines) may be provided in lieu of shade if the employer can demonstrate that these measures are at least as effective as shade in allowing employees to cool.

(e) High-heat procedures. The employer shall implement high-heat procedures when the temperature equals or exceeds 95 degrees Fahrenheit. These procedures shall include the following to the extent practicable:

- (1) 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.
- (2) Observing employees for alertness and signs or symptoms of heat illness. The employer shall ensure effective employee observation/monitoring by implementing one or more of the following:
 - (A) Supervisor or designee observation of 20 or fewer employees, or
 - (B) Mandatory buddy system, or
 - (C) Regular communication with sole employee such as by radio or cellular phone, or
 - (D) Other effective means of observation.
- (3) Designating one or more employees on each worksite as authorized to call for emergency medical services, and allowing other employees to call for provide emergency services when no designated employee is available.
- (4) Reminding employees throughout the work shift to drink plenty of water.

(5) 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.

(6) For employees employed in agriculture, the following shall also apply:

When temperatures reach 95 degrees above or above, the employer shall ensure that the employees takes a minimum ten minute net preventative cool down rest period every two hours. The preventative cool down rest period required by this paragraph may be provided concurrently with any other meal or rest period required by Industrial Welfare Commission Order No. 14 if the timing of the preventative cool down rest period coincides with a required meal or rest period thus resulting in no additional preventative cool down-rest period required in an eight hour work day. If the workday will extend beyond eight hours, then an additional preventative cool down-rest period will be required at the conclusion of the eighth hour of work; and if the work day extends beyond ten hours then another preventative cool down rest period will be required at the conclusion of the tenth hour and so on. For purposes of this section, preventative cool down rest period has the same meaning as "recovery period" in Labor Code Section 226.7(a).

(f) Emergency Response Procedures.

The Employer shall implement effective emergency response procedures including:

- (1) 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.
- (2) 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.
 - (A) 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.
 - (B) 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.
 - (C) 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.
- (3) Contacting emergency medical services and, if necessary, transporting employees to a place where they

can be reached by an emergency medical provider.

(4) 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.

(g) Acclimatization.

(1) All employees shall be closely observed by a supervisor or designee during a heat wave. For purposes of this section only, "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.

(2) 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.

(h) Training.

(1) Employee training. Effective training in the following topics shall be provided to each supervisory and non-supervisory employees 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) The employer's procedures for complying with the requirements of this standard, including, but not limited to, the employer'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.

(D) The concept, importance, and methods of acclimatization, pursuant to the employer's procedures under section (i)(4).

(E) The different types of heat illness, 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 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.

(G) The employer's procedures for responding to signs or symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary.

(H) The employer'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.

(I) The employer'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. These procedures shall include designating a person to be available to ensure that emergency procedures are invoked when appropriate.

(2) Supervisor training. Prior to 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 section (h)(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.

(i) Heat Illness Prevention Plan. The employer shall establish, implement, and maintain, an effective heat illness prevention plan. 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 may be included as part of the employer's Illness and Injury Prevention Program required by section 3203, and shall, at a minimum, contain:

- (1) Procedures for the provision of water and access to shade.
- (2) The high heat procedures referred to in subsection (e).
- (3) Emergency Response Procedures in accordance with subsection (f).
- (4) Acclimatization methods and procedures in accordance with subsection (g).

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

APPENDIX B

HEAT ILLNESS INFORMATION

Heat Stress Danger

A very common and often overlooked health hazard that affects hundreds of American workers is heat stress. Under normal conditions, the body loses 75% of its heat by conduction, convection, radiation, or by evaporation. Heat stress occurs as internal body heat rises due to exertion; the blood vessels near the surface of the skin get bigger to allow greater blood circulation. This naturally occurring process is greatly enhanced when working in areas with high temperature. It also increases the pulse rate, which puts a strain on the heart and the circulatory system. Heat related disorders could include the following type of injuries and illnesses.

Minor Heat Stress Disorders

Sunburn

Sunburn is the mildest type of injury and often overlooked as a danger; it can prevent the body from efficiently eliminating body heat and can lead to other disorders.

Cause	Symptoms	Treatment	Prevention
Exposed skin to ultraviolet light	First degree-red, painful skin	Skin lotions	Limit skin exposure
	Second degree-blistering and or peeling	topical anesthetics	Use sunscreen instead of tanning lotions
		Stay in shaded areas	

Heat Rash

Heat rash is another type of injury; it can also lower the body's ability to lose unwanted heat.

Cause	Symptoms	Treatment	Prevention
Hot, humid environment	Red rash	Ointment	Regular baths
Sweat ducts get plugged	Itching		Keep skin clean and dry
Sweat won't evaporate			
Skin stays wet most of the time			

Major Heat Stress Disorders

Heat Cramps

Heat cramps always indicate a potential danger. They can occur alone or combined with other heat stress symptoms. They are painful and sometimes severe muscle cramps. They are a mild form of heat illness.

Cause	Symptoms	Treatment
Sweating heavily	Sudden onset	Loosen clothing, move to shade or improvise shade
Replacing water but not salt	Hot, moist skin	Drink electrolytic fluid (Gatorade, Thirst-Aid, etc.)
	Normal pulse	Wait to see if symptoms go away
	Normal to slightly high body temperature	Seek medical aid if cramps persist

Heat Exhaustion

Heat exhaustion occurs when the body's normal heat controls are overworked, but have not broken down yet. At this point, the victim may be having heat cramps and there is a very high potential of heat stroke. Older (40 and over) employees are at special risk especially if suffering from any type of coronary artery disease.

Cause	Symptoms	Other Symptoms	First-Aid Treatment
Surface blood vessels that have enlarged to cool the blood have collapsed from loss of body fluids and minerals	Heavy sweating	Anxiety or agitation (anger)	Immediately call 9-1-1 and give them your exact location, contact information and nature of illness.
	Intense thirst from dehydration	Impaired judgment or fainting	Stay with the victim until help arrives.
	Cool, moist skin (clammy and pale)	Tingling hands, feet and/or headache	Move victim to a cool place in the shade and lie them down.
	Weak and rapid pulse (120-200) bpm	Loss of appetite, nausea, vomiting	Loosen or remove clothing and boots
	Low to normal blood pressure	Hyperventilation (rapid breathing, panting)	Cool the victim as fast as possible. Apply cool, wet cloths to cool them.
	Fatigue, weakness or loss of coordination	Oral temperature slightly low	Fan the victim or move them to air-conditioned place.
			If necessary, pour water on the victim. Do not use ice water.
			Have the victim drink water with salt if possible
			Be sure the water is consumed slowly.
			Give half glass of cool water every 15 minutes.
			Discontinue water if victim is nauseated.

Heat Stroke

Heat stroke is the worst of all heat related illnesses. It is a medical emergency requiring immediate medical attention. It is considered a catastrophic illness and there is a high rate of death associated with heat stroke.

Heat stroke generally progresses from heat cramps and/or exhaustion with sudden onset of heat stroke symptoms.

Heat stroke is caused by the body's depletion of salts and water supplies. Temperature regulation fails (the body's natural cooling mechanism shuts down). Body temperature rises to fatal levels. Some signs and symptoms are:

Early Symptoms	Advanced Symptoms	First-Aid Treatment
High body temperature (above 103 degrees °F)	Seizure or convulsions	Call 9-1-1 for emergency medical assistance and give them your exact location, contact information and nature of illness, or get the victim to the hospital immediately. Delay can be fatal.
* Absence of sweating (in most cases)	Collapse	Stay with the victim until help arrives.
* Red, hot or flushed, dry skin	Loss of consciousness	Move victim to a cooler environment in the shade.
* Strong rapid pulse	* Deep coma	Remove clothing.
Difficult breathing	No detectable pulse	Try a cool bath, sponging, or wet sheet to reduce body temperature.
Constricted pupils	Body temperature over 108 °F	If necessary, pour water on the victim. Do Not use ice water.
High blood pressure		Watch for breathing problems.
* Headache or dizziness		Use extreme caution.
* Confusion or delirium		Use fans and air conditioners, if possible.
Bizarre behavior		Give sips of water if the victim is conscious.
Weakness		Be sure water is consumed slowly.
* Nausea		Give half a glass of cool water every 15 minutes.
		Discontinue water if victim is nauseated.

* Most prominent symptoms

Fast action must be taken to cool the victim's body before a serious injury or death occurs. Medical assistance must also be obtained.

First-Aid Treatment

- **The victim's temperature must be lowered as fast as possible.**
- If possible immerse in cold water or massage the victim's body with ice
- Do not give liquids to an unconscious victim
- Call for medical assistance and transport to hospital

The most important step is recognition of symptoms and quick treatment. The same first-aid treatment for heat exhaustion applies, but start by cooling the body **As Soon As Possible**.

NOTE: Heat stroke is most serious and most deadly form of heat illness because the symptoms may be masked by sweating (in some cases), cool skin may hide actual body core (internal) temperature, and collapse can be mistaken for heart attack or head injury.

Heat Stress Control

Recognizing heat stress disorder symptoms and knowing first-aid measures, is an important part in prevention of a serious accident. Prevention of heat stress disorders is also important. Controlling heat stress can be accomplished three basic ways: acclimatization, proper work procedures, and food and water intake.

ACCLIMATIZATION-is the ability to perform a maximum amount of strenuous work in heat by gradually getting used to the climate you work in. Good physical condition is of key importance.

WORK PROCEDURES-may be altered in such a way that strenuous activities are rotated among several employees to protect them from heat. Workers can alternate light and heavy work. Workloads can be adjusted based on body size and physical strength. Heavy work can also be scheduled for the cooler parts of the day, leaving less strenuous activities for the hotter parts.

FOOD AND WATER INTAKE-is important for several reasons: 1) Hot foods add heat directly to the body and heavy foods divert blood flow to the digestive system rather than the skin surface for cooling. 2) Salty foods can increase thirst, and body temperatures. Lunches during hot days should be light and cool followed by a short rest period in a cool area.

Water should be readily available throughout the day. Water intake should equal fluid loss throughout the day (5-7 ounces every 15-20 minutes) or about a 12 oz. soda can size container per hour. Electrolytes and drinks designed to replace blood fluids are okay. Alcoholic beverages should never be consumed during strenuous activities in high heat, because alcohol dehydrates the body.

Salt supplement should only be used to treat heat disorders and not to prevent them. Salt tablets are considered harmful because they do not enter the system as fast as water or other fluids. If a person sweats continuously or repeatedly, a little extra salt on food may help. The normal diet usually contains enough salt in it.

If using salt to treat heat injuries, make a 0.1 percent saline solution by adding 1/4-teaspoon table salt per quart of water. If only salt tablets are available crush two of them completely so they can dissolve quickly to make the solution.

Other Heat Stress Factors

Proper training and preventative measures can prevent a serious illness and loss of work productivity. It is everyone’s responsibility to work safely and report any potential hazards. Most heat stress factors are controllable, such as the types of foods eaten, the amount of salt used, amount of water used, and personal physical condition. The following is a list of other physical factors that can prevent the body’s natural ability to regulate body temperatures:

Heat Stress Contributing Factors	
Dehydration (loss of water)	Older age (over 40)
Diarrhea and antidiarrheal medication.	Medication that inhibit sweating (antihistamines, cold medicines, diuretics, some tranquilizers)
Exposure to high temperatures at night.	Previous occurrence of heat stroke

Fatigue	Poor physical condition
Improper work procedures.	Recent immunization (can produce fever)
Lack of acclimatization	Recent drug or alcohol use (within 24 hours)
Loss of sleep	Skin trauma (heat rash, sun burn)
Obesity	Wrong type or amount of clothing (tight clothing restrict blood circulation)

Weather & Other Heat Information Web Sites

Title	Web Link
Weather at Cal Poly Pomona (Onsite Weather Station)	https://www.cpp.edu/weather.shtml Data Retrieval: http://www.cimis.water.ca.gov/WSNReportCriteria.aspx
Weather Underground for Pomona	http://www.wunderground.com/weather-forecast/zmw:91768.1.99999?MR=1
Weather.com for Pomona	http://www.weather.com/weather/5day/l/91768:4:US
Cal OSHA Heat Illness Prevention	http://www.dir.ca.gov/dosh/heatillnessinfo.html
Federal OSHA Campaign to Prevent Heat Illness in Outdoor Workers	https://www.osha.gov/SLTC/heatillness/index.html
Heat Safety Tool Smartphone App	https://www.osha.gov/SLTC/heatillness/heat_index/heat_app.html



Heat Safety

Supervisor's Daily Checklist

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(Revised 04/30/2015)

- **Water**
 - Is there plenty of fresh, cool drinking water located as close as possible to the workers?
 - Is the water provide free of charge?
 - Is there a plan for refilling water coolers throughout the day?

- **Acclimatization**
 - Is there a plan in place to allow workers to get acclimated to the heat?
 - Are new employees closely observed for their first 14 days of employment?
 - Are all employees closely observed by a supervisor, lead or designee during a heat wave (Note: A “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)?

- **Shade and Rest**
 - Is a shade structure available at all times (regardless of the weather) for workers to rest and cool down?
 - Is the shade located in an area is safe and healthy and does not deter or discourage access or use?
 - Are employees taking a “preventative cool-down rest” monitored for symptoms of heat illness, asked if he or she is experiencing symptoms of heat illness, encouraged to remain in the shade and not ordered back to work until symptoms are gone?
 - Can the shade accommodate all the employees?
 - Is the shade structure up and ready when the weather forecast is 80°F or higher?
 - Do you have a plan in place for checking the weather forecast?

- **Training**
 - Have workers been trained to recognize and prevent heat illness BEFORE they start working outdoors?
 - Can workers identify symptoms of heat illness?
 - Have both Supervisory and non-supervisory employees been trained as required by Section 6.0 of the Outdoor Heat Illness Prevention Plan?

Heat Safety

Supervisor's Daily Checklist

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○ **Emergency Plan**

- Does everyone know who to notify if there is an emergency?
- Can workers explain their location if they need to call an ambulance?
- Does everyone know who will provide first aid?
- Are employees exhibiting signs or symptoms of heat illness monitored and not 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?
- Is emergency response and immediate first aid provided for all Major Heat Stress Disorder, such as Heat Exhaustion/Heat Stroke, or symptoms such as decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior or convulsion?

○ **Worker Reminders**

Have workers been reminded to:

- Drink water frequently?
- Rest in the shade for at least 5 minutes as needed?
- Look out for one another and immediately report any symptoms?

○ **High-Heat Procedures**

When the temperature exceeds 95°F:

- Prior to starting the work shift, does the Supervisor or Lead meet with the employees and review high heat procedures, remind them to drink plenty of water and their right to a cool-down period?
- Are cool-down periods of 10 minutes every two hours provided?
- Is effective communication and monitoring, including a mandatory buddy system and/or regular communication with employees working by themselves established and operational?
- Can employees contact a supervisor when necessary?
- Are employees observed for alertness and signs or symptoms of heat illness?
- For employee observation the observer cannot be assigned to supervise more than 20 employees
- Are employees remind to drink water throughout the shift?