



Heat Illness Prevention Program

For Indoor and Outdoor locations

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Revision Date: 09/09/24

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1. Program Description

California employers must protect their workers from the hazards of excessive heat exposure. California Code of Regulations, Title 8 (CCR T8), section 3395 addresses outdoor workplaces, and section 3396 addresses indoor workplaces. Depending on the circumstances, employers must develop written worker heat illness prevention procedures that address one or both types of workplaces.

This program ensures that all UC Riverside employees are protected from heat illness whether indoors or outdoors and are aware of and can recognize heat illness symptoms, methods to prevent illness, and procedures to follow if symptoms occur.

2. Scope

The Heat Illness Prevention Program applies to all UC Riverside employees and applies to all indoor and outdoor places of employment where environmental or personal risk factors for heat illness are present. UC Riverside locations likely to be impacted by heat illness include but are not limited to:

- Most outdoor locations
- Steam tunnels
- Mechanical and utility rooms
- Dishwashing rooms
- Boiler rooms
- Cage washing areas
- Kitchens
- Greenhouses
- Sheds and storage containers
- Warehouses
- Autoclave rooms
- Mechanic's Shops
- Locker rooms

3. Definitions

Acclimatization: means the temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization

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peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.

Administrative Control: means a method to limit exposure to a hazard by adjustment of work procedures, practices, or schedules. Examples include but are not limited to: acclimatizing employees, rotating employee assignments, scheduling work early in the day or at night, using work/rest schedules, reducing work speed, and adjusting required clothing to accommodate if hazards allow.

Clothing that Restricts Heat Removal: means full-body covering the arms, legs, and torso that is any of the following: waterproof, designed to protect from chemical, biological, physical, radiological or fire hazards, and protection for worker or work process contamination. Exceptions are clothing and uniform clothing constructed of knit or woven fibers that are permeable to air and water and without full-body thermal, vapor, or moisture barriers.

Cool Down Area - Indoor: Area designated by supervisor that provides an indoor area below 82 degrees and shielded from high radiant heat sources (ovens, sunlight, etc.) for employees to take cool-down breaks. Cooling areas must provide seating and have someone on duty to monitor employees for symptoms while in the Cool Down Area.

Engineering Control: means a method of control or device that removes or reduces hazardous conditions or creates a barrier between the hazard and the employee to reduce exposure to heat. Examples include but are not limited to: isolating employees from heat sources, local exhaust ventilation, fans, air conditioning, swamp coolers, misting fans, natural ventilation where the outdoor temperature is cooler, shielding for radiant heat sources, and insulation of hot surfaces.

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.

Globe Temperature: means the temperature measured by a globe thermometer, which consists of a thermometer sensor in the center of a six-inch diameter hollow copper sphere painted on the outside with a matte black

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finish, or equivalent. The globe thermometer may not be shielded from direct exposure to radiant heat while the globe temperature is being measured. There are instruments which can simulate a globe thermometer and provide an equivalent reading using a standard conversion equation that can be substitutes for the 6" globe thermometer.

Heat Illness: means a serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat rash, heat cramps, heat exhaustion, heat syncope, and heat stroke.

Heat Wave: any day in which the predicted high temperature for the day will be at least 80 degrees Fahrenheit and at least 10 degrees Fahrenheit higher than the average high daily temperature in the preceding five days.

High-Radiant Heat Area: means a work area where the globe temperature is at least five degrees Fahrenheit greater than the dry bulb temperature.

High Radiant Heat Source: means any object, surface, or other source of radiant heat that, if not shielded, would raise the globe temperature of the cool-down area five degrees Fahrenheit or greater than the dry bulb temperature of the cool-down area. High radiant heat sources include but are not limited to: direct sunlight, boilers, steam pipes, ovens, hot exhaust, etc. that emit large amounts of heat.

Indoor: refers to a space that is under a ceiling or overhead covering that restricts airflow and is enclosed along its entire perimeter by walls, doors, windows, dividers, or other physical barriers that restrict airflow, whether open or closed. Indoor does not refer to a shaded area that meets the requirements of and is used exclusively as a source of shade for employees working outdoors.

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 Heat Protective Equipment: means equipment worn to protect the user against heat illness. Examples of personal heat-protective equipment that may be effective at minimizing the risk of heat illness in a particular work area

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include, but are not limited to: water-cooled garments, air-cooled garments, cooling vests, wetted over-garments, heat-reflective clothing, and supplied-air personal cooling systems.

Personal Risk Factors for Heat Illness: 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.

Potable: A liquid that is suitable and safe to drink.

Preventive Cool Down Rest: means a rest taken in a cool-down area to prevent overheating.

Preventative Recovery Period: A period, at least five minutes, used to recover from the heat in order to prevent further heat illness.

Radiant Heat: means heat transmitted by electromagnetic waves and not transmitted by conduction or convection. Sources of radiant heat include the sun, hot objects, hot liquids, hot surfaces, and fire.

Relative Humidity: means the amount of moisture in the air relative to the amount that would be present if the air were saturated.

Shade: 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 the 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.

Shielding: means a physical barrier between radiant heat sources and employees that reduces the transmission of radiant heat.

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 with sunlight.

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Union Representative: means a recognized or certified collective bargaining agent representing the employees.

Wet Bulb Globe Temperature (WBGT): means a type of apparent temperature used to estimate the effect of temperature, humidity, wind speed (wind chill), and visible and infrared radiation (usually sunlight) on humans. It is used by industrial hygienists, sporting events and the military to determine appropriate exposure levels to high temperatures. Measurements are taken with a WBGT meter, and the actual WBGT is derived using a formula.



4. Responsibilities

Employees

- Complete [UC Heat Illness](#) training.
- Comply with all heat illness prevention procedures for your department while performing assigned duties.
- Communicate with supervisors about heat illness risks and exposures you are experiencing so that controls can be put in place
- Come to work well rested and hydrated
- Drink 8 ounces of water every 15 minutes during work
- Take breaks as often as needed to avoid heat illness symptoms and recover
- Alert supervisors immediately if you or a co-worker experiences any symptoms of heat illness
- Call 911 to request emergency medical services in the event medical assistance is required for anyone.
- Take extra precautions while wearing PPE and face coverings by reducing the interval times between breaks and visits to shade.

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- Alert your supervisor if you have heat intolerance due to medical conditions and/or medications you are taking.
- Ensure access to a shaded area is available to recover from heat related symptoms prior to beginning work tasks.
- Request supervisors schedule outdoor tasks during the hotter months early in the day or at night when temperatures are lower.
- Inform supervisors if shade and/or water is inadequate.

Supervisors

- Complete supervisor training track in [UC Heat Illness](#).
- Require all affected employees to complete [UC Heat Illness](#) training in the UCR Learning Center.
- Identify all tasks/employees that are required to work indoors or outdoors where the potential for heat illness exists.
- Monitor weather conditions and alert employees of heat illness prevention measures when the temperature exceeds 80 degrees at a work location, indoors or outdoors. Use [NIOSH Heat Stress App](#) and [National Weather Service](#) to monitor weather.
- Use and share the UCR Main Campus Worksite Heat Plan, develop a plan for indoor areas, or develop an outdoor plan for off-campus and special areas using the templates provided in [chapter 11](#).
- Adapt and modify Worksite Specific Heat Illness Work Plans for impacted work areas to document worksite controls in place.
- Communicate Worksite Specific Heat Illness Work Plans to employees prior to the start of work each day when heat illness is a risk.
- Request a heat illness exposure assessment from EH&S if you are unsure if an area is subject to the regulation.
- Provide worksite-specific training that identifies specifically where and how water, rest, and shade are provided to employees.
- Take extra precautions for teams wearing PPE and face coverings by reducing the interval times between breaks and increasing visits to cooling centers.
- Ensure that adequate water, shade, and cooling areas are available at the job site when the environmental risk factors for outdoor and indoor heat illness are present.
 - Always provide shade and cooling centers when the temperature reaches 80 degrees and by request if lower than 80 degrees.
 - Identify indoor air-conditioned cooling locations close to scheduled work and inform employees of them.

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- Outdoor work in agriculture, Landscape Services, and tasks considered to be construction only are subject to high-heat procedures when outdoor temperatures reach 95 degrees.
- Encourage and allow employees to take cool-down breaks as needed when they feel they need to do so to protect themselves from overheating
- Supervisors must monitor employees or designate someone to monitor employees during work and breaks to watch for signs of heat illness
- Encourage employees to drink water frequently
- Provide coolers of chilled water and ice in shade areas and work locations that are away from known water sources.
- If employees show any signs of heat illness initiate first aid procedures
- Call 911 to request emergency medical services in the event medical assistance is required

Environmental Health and Safety (EH&S)

- Establish and update the written Heat Illness Prevention Program.
- Provide educational materials for pre-work meetings, safety meetings, and staff meetings as requested.
- Provide [UC Heat Illness](#) training through the UC Learning Center and in-person as requested.
- Provide consultation/training to departments who fall within the scope of the program.
- Conduct heat exposure assessments when necessary.
- Maintain a list of indoor areas that have been determined or assumed to be work areas subject to the Cal/OSHA indoor heat regulation.
- Assist departments in determining when, where, and how water and shade should be provided.
- Assist departments in selection of engineering and administrative controls as requested.

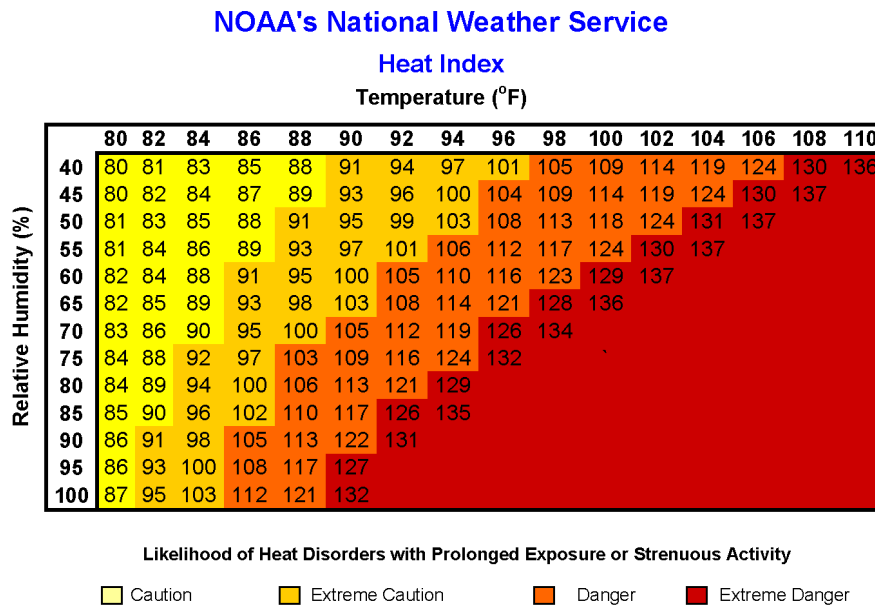
5. Outdoor Heat Illness

Outdoor Temperature Assessment

For outdoor workplaces, when temperatures are greater than 80°F controls including water, rest and shade must be provided. Supervisors should monitor weather conditions year-round. Here in Southern California 80-degree days can happen in any month and trigger heat illness prevention actions. For UCR purposes, the heat index will provide the adjusted temperature we should

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base our level of action upon. You can determine the heat index by finding the temperature and humidity from the [National Weather Service](#) for forecasts and current conditions. You will need to use the heat index chart below to determine the heat index. An acceptable alternative to this is to download and use the [NIOSH Heat Safety Tool](#) app on a cell phone or other supported device. The app is user-friendly tool provides you the heat index (feels like temperature) and also provides symptom lists, first aid procedures, a hydration and rest timers and other useful features.



If the heat index or “feels like” temperature is in the danger or extreme danger zone (orange or red), the work should be rescheduled for overnight, earlier in the day or when the weather improves, if feasible. Activities outside during a danger or extreme danger period should be for emergency and critical repairs only. All other regular non-critical work must be rescheduled unless engineering and administrative controls can effectively reduce the hazard as determined by EH&S.

Supervisors and employees can request EH&S assistance in determining if outdoor tasks are putting employees at risk for heat illness. EH&S can measure the current temperature using a Kestrel 5400 or similar calibrated instrument.

Outdoor High Heat Procedures

When the temperature hits 95 degrees or higher, high-heat procedures must be implemented by supervisors in Agricultural Operations, Landscape Services,

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or when work considered construction is done by UCR employees. These procedures are as follows:

1. Supervisors must ensure effective communication by voice, observation, or electronic means is maintained so that employees at the worksite can contact a supervisor when necessary. Cell phone calling or texting, and radio communication are acceptable but must be tested to ensure it works and also continues to work throughout the shift.
2. Employees must be observed for alertness and signs or symptoms of heat illness. The supervisor is responsible to ensure effective observation/monitoring by implementing one or more of the following:
 - a. Supervisor or designee observing 20 or fewer employees per person
 - b. Mandatory buddy system
 - c. Regular communication with each employee by radio, cell phone
 - d. Another effective method as approved by EH&S
3. Designate one or more employees on each worksite as authorized to call for emergency medical services, and allow other employees to call for emergency services when no designated person is available.
4. Reminding employees to drink water throughout the shift
5. Supervisors must hold pre-shift meetings before the start of work to review the high heat procedures, where to access shade and cooling areas, supervisors must remind employees to take water with them and encourage them to drink, and remind employees of their right to take a cool-down rest when necessary.
6. For employees in agricultural work:
 - When temperatures reach 95 degrees or above, the employer shall ensure that the employees take 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 (8 CCR 11140) 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 workday.
 - 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 workday 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, the preventative cool-down rest period has the same meaning as the “recovery period” in Labor Code Section 226.7(a).

6. Indoor Heat Illness

Indoor Temperature Assessment

Supervisors should evaluate indoor work locations to determine if employees may be at risk for heat related illness. Using a thermometer and hygrometer to check the location, temperature and humidity can be plugged into the National Weather Service Heat Index Chart to determine if further investigation is needed. For indoor work locations that seem hot, have a constant temperature over 82 degrees and/or humidity of 40% or more (measured with a standard thermometer and humidity sensor), or have radiant heat sources where employees are frequently exposed, supervisors should request an indoor temperature assessment from EH&S. EH&S will review the location using one or more methods recommended by Cal/OSHA to determine if the location is subject to the regulation.

In addition, EH&S will manage a list of locations that are determined to or assumed to pose heat related risks to employees. Supervisors for employees that work in these locations will be made aware and EH&S will assist in developing a plan for implementing controls, and posting warnings.

EH&S may use a Kestrel 5400, Kestrel Drop temperature and humidity Data Logger, a manual globe thermometer, or other calibrated equipment to take readings in work areas to determine the need for and type of control plan, if necessary. In most cases, suspected areas will be assumed to be a high heat work areas and controls will be put in place without a full assessment. Where it may be necessary to conduct an assessment to determine proper controls, if controls are working, or whether the space is subject to the regulation assessments will be conducted. Assessments will consist of multiple measurements taken during work hours and days to represent worker exposure, employees working in the area will be interviewed and observed, and a report created to provide clear results and any recommendations for engineering and administrative controls that may be necessary. A conference with the supervisors, affected employees, and union representatives (if applicable) will be scheduled to discuss the results and to develop the work plan. Supervisors will be responsible to develop, implement, enforce, and communicate the work plan to all affected employees.

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Indoor Heat Exposure Specific Control Measures

Control measures will be implemented when either of the following occurs:

- The temperature equals or exceeds 87 degrees Fahrenheit when employees are present; or
- The heat index equals or exceeds 87 degrees Fahrenheit when employees are present; or
- Employees wear clothing that restricts heat removal and the temperature equals or exceeds 82 degrees Fahrenheit; or
- Employees work in a high radiant heat area and the temperature equals or exceeds 82 degrees Fahrenheit.

Feasible engineering controls will be implemented first to reduce the temperature and heat index to below 87°F (or temperature to below 82°F for workers working in clothing that restricts heat removal or working in high radiant heat areas). Administrative controls will be added if feasible and engineering controls are not enough to comply with the standard. If both engineering and administrative controls are not enough to decrease the temperature and minimize the risk of heat illness, then personal heat-protective equipment must be provided by the department. Contact EH&S for assistance choosing appropriate heat-protective equipment.

Indoor Specific Engineering Controls

Types of Engineering controls that may be implemented to lower the indoor temperature include but are not limited to:

- Cooling fans
- Air conditioning
- Increased natural ventilation, such as open windows and doors when the outdoor temperature or heat index is lower than the indoor temperature and heat index
- Local exhaust ventilation at points of high heat production or moisture (such as exhaust hoods in laundry rooms)
- Reflective shields to block radiant heat
- Insulating/isolating heat sources from workers, or isolating workers from heat source
- Elimination of steam leaks
- Insulation of steam pipes

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- Cooled seats or benches
- Evaporative coolers
- Dehumidifiers

Indoor Specific Administrative controls

The following administrative controls will be implemented once all feasible engineering controls have been implemented. Administrative controls may also be used until engineering controls can be implemented. These controls are modified work practices that can reduce heat exposure by adjusting work procedures, practices, work/rest schedules, or changing the time of day for work.

The following are examples:

- Schedule shorter shifts or work periods, especially during heat waves.
- For newly hired workers and non-acclimatized existing workers, gradually increase shift length over the first one to two weeks.
- Require mandatory rest breaks in a cooler environment, such as a shady location or an air-conditioned building. The duration of the rest breaks should increase as heat rises, work intensifies, or restrictive PPE is employed.
- Schedule work at cooler periods or times of day, such as early morning or late afternoon.
- Rotate job functions among workers to help minimize exertion and heat exposure. If workers must be in proximity to heat sources, mark them clearly, so they are aware of the hazards.
- Require workers to work in pairs or groups during extreme heat so they can monitor each other for signs of heat illness.

7. Basic controls for Heat Illness Prevention

Provision for water

Whenever environmental risk factors for heat illness exist, supervisors are responsible to ensure that clean, fresh, and cool potable water is readily available to employees. On the UCR main campus water is readily available in every public building via drinking fountains and bottle filler stations. In some cases where necessary departments may supply refillable jugs or bottled water for employees to carry with them to work locations outdoors.

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Where unlimited drinking water is not immediately available from a plumbed system, supervisors must provide enough water for every employee to be able to drink one quart of water per hour for the entire shift (at least 2 gallons per employee for an 8-hour shift). Smaller quantities of water may be provided at the beginning of the shift if there are effective procedures for replenishing the water supply during the shift as needed.

The Cal/OSHA standard requires not only that water be provided, but that supervisors encourage employees to drink frequently. Employees must understand that thirst is not an effective indicator of a person's need for water and it is recommended that individuals drink one quart of water, or four 8-ounce cups, per hour when working in hot environments.

Fluid Replacement Guide

Heat Category	WBGT Index, (°F)	Easy Work	Moderate Work	Hard Work
		<i>Fluid Intake (quarts/hour)</i>	<i>Fluid Intake (quarts/hour)</i>	<i>Fluid Intake (quarts/hour)</i>
1	78° - 81.9°	½	¾	¾ (1)*
2	82° - 84.9°	½	¾ (1)*	1 (1½)*
3	85° - 87.9°	¾	¾ (1)*	1 (1½)*
4	88° - 89.9°	¾	¾ (1½)*	1 (1½)*
5	> 90°	1	1 (1½)*	1 (1½)*

*Use the amounts in parentheses for continuous work when rest breaks are not possible. Leaders should ensure several hours of rest and rehydration time after continuous work. This guidance will sustain performance and hydration for at least 4 hours of work in the specified heat category. Fluid needs can vary based on individual differences (± ¼ qt/hr) and exposure to full sun or full shade (± ¼ qt/hr). Rest means minimal physical activity (sitting or standing) in the shade if possible. Body armor - add 5°F to WBGT Index in humid climates. NBC (MOPP 4) - Add 10°F (Easy Work) or 20°F (Moderate or Hard Work) to WBGT Index. **CAUTION:** Hourly fluid intake should not exceed 1½ qts. Daily fluid intake should not exceed 12 qts.



USAPHC 1-800-222-8895 <http://phc.army.mil>

TA-091-0615 (Also available as a poster.)
Approved for public release, distribution unlimited.

Departments shall take one or more of the following steps to ensure employees have access to drinking water:

- Provide access to drinking fountains
- Supply water cooler/dispenser and single service cups
- Supply sealed one-time-use water containers

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- Drinking water and water dispensers shall meet the following requirements:
 - All sources of drinking water shall be maintained in a clean and sanitary condition
 - Drinking water must always be kept cool. When temperatures exceed 90°F it is recommended that ice be provided to keep the water cool. (Ice is available at EH&S)
 - Potable drinking water dispensers used to provide water to more than one person shall be equipped with a spigot or faucet.
 - Any container used to store or dispense drinking water shall be clearly marked as to the nature of its contents and shall not be used for any other purpose.
 - Dipping or pouring drinking water from containers, such as barrels, pails, or tanks, is prohibited regardless of whether or not the containers are fitted with covers.
 - The use of shared cups, glasses, or other vessels for drinking purposes is prohibited.
 - Non-potable water shall not be used for drinking.
 - Outlets for non-potable water shall be posted in a manner understandable to all employees that the water is unsafe for drinking.

Access to Shade and Cool-Down Areas

Supervisors are responsible to ensure that employees have access to a shaded area. Shaded areas should be large enough to accommodate 25 percent of the employees on a shift and allow employees to sit in the shade without touching each other.

Cool-down areas in air-conditioned buildings can be used in lieu of shade and is preferred when feasible. On main campus there are few locations where access to an air-conditioned building is more than a 5-minute walk.

If the National Weather Service, as of 5 p.m. the previous day, forecasts the temperature to be over 80°F, shade structures must be available at the beginning of the shift and present throughout the day. Regardless of predicted temperatures, supervisors must always have the capability to provide shade promptly if an employee requests it. If the temperature exceeds 90°F, shade must actually be present regardless of the previous day's predicted temperature high.

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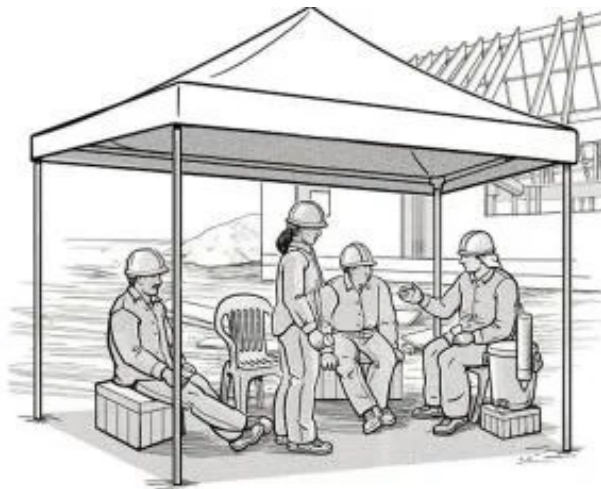
The nearest shaded area must be as close as practicable. Usually, this will mean that shade must be reachable within a 2 1/2-minute walk, but in no case more than 1/4 mile or a five-minute walk away, whichever is shorter.

Canopies, umbrellas, or other temporary structures may be used to provide shade, provided they block direct sunlight. Trees and dense vines can provide UCR Heat Illness Protection Program shade if the canopy of the trees is sufficiently dense to provide substantially complete blockage of direct sunlight. Areas shaded by artificial or mechanical means, such as by a pop-up canopy as opposed to a tree, must provide means for employees to avoid contact with bare soil.

The interior of a vehicle may be used to provide shade if the vehicle is airconditioned and the air conditioner is operating.

While employees are taking cool-down breaks in the shade, supervisors, or their trained designees must monitor employees for symptoms of heat illness. If any employee shows signs of heat illness appropriate first aid or emergency response should be initiated.

If any employee shows signs of heat illness appropriate first aid or emergency response should be initiated.



Preventive Recovery Periods

A recovery period is essential for the prevention of heat illness. The supervisor is required to provide access to shade for employees who believe they need a preventive recovery period from the effects of heat and for any who exhibit indications of heat illness.

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Access to shade must be allowed at all times, and employees must be allowed to remain in the shade for at least five minutes. If employees are wearing PPE including but not limited to respirators, face coverings, disposable coveralls, backpack vacuums, arc flash suits, and welding gear they need to be allowed more frequent breaks to prevent overheating. These breaks may need to be longer in order to allow the employees to remove PPE to cool more completely. In addition, activities in hot locations like in the tunnels, some welding, or pipe soldering operations will require more frequent breaks where the employees need to leave the area to a cooler area often.

The purpose of the preventive recovery period is to reduce heat stress on the employee. The preventive recovery period is not a substitute for medical treatment.

More Information:

- [OSHA Heat Safety Tool for Android or Apple](#)
- Work Rest Guidelines: [English](#) | [Spanish](#)

Acclimatization

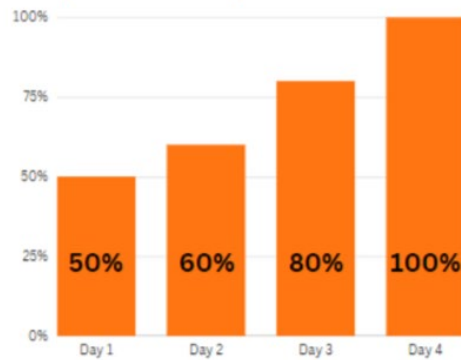
Supervisors are required to acclimatize employees and allow time to adapt when temperatures rise suddenly and employee's risk for heat illness increase. Acclimatization may also be required for new employees, employees working at temperatures to which they have not been exposed for several weeks or longer, or employees assigned to new jobs in hot environments. There is no set time for acclimatization because everyone is different. Generally, about four to fourteen days of daily heat exposure is needed for acclimatization. See the graphics below for a suggested acclimatization schedule. Heat acclimatization requires a minimum daily heat exposure of about two hours of work. Gradually increase the length of work each day until an appropriate schedule adapted to the required activity level for the work environment is achieved. This will allow the employee to acclimate to conditions of heat while reducing the risk of heat illness.

It should be noted that new employees are among those most at risk of suffering the consequences of inadequate acclimatization. Supervisors with new employees (newly hired, transferred, or assigned) should be extra-vigilant

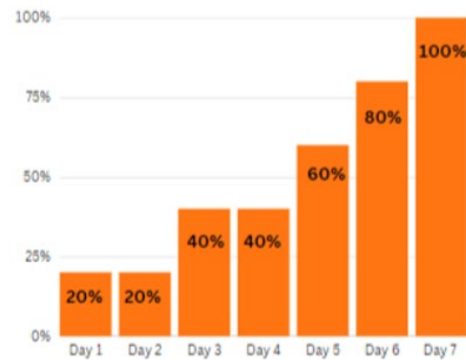
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during the acclimatization period, and respond immediately to signs and symptoms of possible heat illness.

Sample Plan for Experienced Workers



Sample Plan for New Workers



Heat Hazard Controls

Controls for indoor and outdoor heat exposure are very similar any or all of the following may apply to both situations.

Engineering Controls

- Fans
- Evaporative cooling fans
- Air conditioning
- Shade structures
- Increased natural ventilation, such as open windows and doors when the outdoor temperature or heat index is lower than the indoor temperature and heat index
- Local exhaust ventilation at points of high heat production or moisture (such as exhaust hoods in laundry rooms)
- Reflective shields to block radiant heat
- Insulating/isolating heat sources from workers, or isolating workers from heat source
- Elimination of steam leaks
- Insulation of steam pipes
- Cooled seats or benches
- Evaporative coolers

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- Dehumidifiers

Administrative Controls

- Schedule shorter shifts or work periods, especially during heat waves.
- For newly hired workers and non-acclimatized existing workers, gradually increase shift length over the first one to two weeks.
- Require mandatory rest breaks in a cooler environment, such as a shady location or an air-conditioned building. The duration of the rest breaks should increase as heat rises, work intensifies, or restrictive PPE is employed.
- Schedule work at cooler periods or times of day, such as early morning or late afternoon.
- Rotate job functions among workers to help minimize exertion and heat exposure. If workers must be in proximity to heat sources, mark them clearly, so they are aware of the hazards. Require workers to work in pairs or groups during extreme heat so they can monitor each other for signs of heat illness.

Personal Protective Equipment

- Ice cooling vests
- Evaporative vests
- Light colored clothing
- Lightweight clothing
- Sun hat
- Vented shoes (unless otherwise restricted)
- cooling towels and scarves
- sunscreen

8. Heat Illness Personal Risk Factors and Symptoms

Heat Illness Symptoms

Heat-related illnesses occur when the body's temperature regulation mechanisms are overwhelmed by excessive heat exposure. These conditions can range from mild to severe and require immediate attention to prevent further complications. Here is a synopsis of common heat illnesses and their respective symptoms:

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1. Heat Rash (Prickly Heat) Symptoms:

- Red, itchy rash with small blisters, usually occurring in areas covered by clothing.

2. Heat Cramps Symptoms:

- Painful muscle cramps, particularly in the legs, arms, or abdomen
- Profuse sweating.

3. Heat Syncope (Fainting) Symptoms:

- Dizziness
- Lightheadedness
- Fainting
- Temporary loss of consciousness due to reduced blood flow to the brain.

4. Heat Exhaustion Symptoms:

- Heavy sweating
- Weakness
- Fatigue
- Dizziness
- Headache
- Nausea
- Vomiting
- Cool and clammy skin
- Fast and shallow breathing
- Elevated heart rate
- Low blood pressure

5. Heat Stroke (Hyperthermia) Symptoms:

- High body temperature (usually above 103°F or 39.4°C)
- Hot and dry skin (lack of sweating),
- strong and rapid pulse
- Throbbing headache
- Confusion
- Dizziness
- Seizures

UCR Heat Illness Protection Program

- Disorientation
- Loss of consciousness
- Other potentially life-threatening complications
- Requires medical attention

It is essential to recognize the signs and symptoms of heat-related illnesses promptly. If you or someone else experiences severe symptoms indicating heat stroke, seek immediate medical attention. In the case of mild to moderate symptoms, it is crucial to move to a cooler environment, rest, drink plenty of fluids, and apply cool compresses to aid in cooling the body. Prevention is key to avoiding heat-related illnesses.

Personal Risk Factors


Employees may have personal risk factors that cause them to be more susceptible to heat illness. Employees can discuss with their supervisor or contact the UCR Disability Management office to discuss accommodations that may be needed for chronic conditions. Personal behaviors may also place a person at higher risk for heat illness. Personal risk factors can include but are not limited to:

- Recreational Drug use
- Prescription medications
- Caffeine consumption
- Dehydration
- Age
- Physical stamina
- Heart conditions
- Migraines
- Viral infections

9. Emergency Procedures

If an employee has any symptoms of heat illness, first-aid procedures should be initiated without delay. Common early signs and symptoms of heat illness include headache, muscle cramps, and unusual fatigue. However, progression to more serious illness can be rapid, and can include loss of consciousness, seizures, mental confusion, unusual behavior, nausea or vomiting, hot dry skin, or unusually profuse sweating.

HEAT EXHAUSTION OR HEAT STROKE?



<p>HEAT EXHAUSTION SYMPTOMS</p> <ol style="list-style-type: none">1. Faint or dizzy2. Excessive sweating3. Cool, pale, clammy skin4. Nausea, vomiting5. Rapid, weak pulse6. Muscle cramps <p>HOW TO TREAT IT</p> <ol style="list-style-type: none">1. Move to cooler location2. Drink water3. Take a cool shower or use cold compresses	<p>HEAT STROKE SYMPTOMS</p> <ol style="list-style-type: none">1. Throbbing headache2. No sweating3. Body temp above 103° Red, hot, dry skin4. Nausea, vomiting5. Rapid, strong pulse6. May lose consciousness <p>HOW TO TREAT IT</p> <ol style="list-style-type: none">1. Get emergency help2. Keep cool until treated
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Any employee exhibiting any of the above-mentioned symptoms requires immediate attention. Even the initial symptoms may indicate serious heat exposure. If medical personnel are not immediately available onsite and serious heat illness is suspected, emergency medical personnel should be immediately contacted and on-site first aid undertaken. No employee with symptoms of possible serious heat illness should be left unattended or sent home without medical assessment and authorization.

Remote work locations should plan to have coolers with water and ice in order to cool victims while waiting for emergency responders to arrive.

Any employee who recognizes the symptoms or signs of heat illness in themselves, or in coworkers, should immediately report this condition to their supervisor. When you recognize signs of heat illness in yourself or in a co-worker:

- 1. Move them to a shaded area for a recovery period of at least five minutes.**
- 2. If the condition appears to be uncertain, severe (such as, but not limited to, decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior or convulsions) or the employee does not recover quickly, then emergency medical care is needed.**
- 3. Someone 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.**

- 4. Immediately report to your supervisor any symptoms or signs of heat illness you may be experiencing or observing in a co-worker.**
- 5. Call 911 or UCR Police at 951-827-5222.**

10. Reporting Requirements

Constant awareness of and respect for heat illness prevention procedures and compliance with all applicable UC Riverside safety rules is mandatory.

Employees are encouraged to report any safety concerns to their supervisor first. Represented employees should also follow the reporting procedures for their specific contracts. All employees can also report to EH&S @ (951) 827-5528, or using the EH&S Report an Incident, Injury, or Safety Concern form. All reports made to EH&S can be made anonymously and there are never any consequences for reporting safety concerns.

Supervisors may issue warnings to employees and implement disciplinary actions up to and including termination for failure to follow the guidelines of this program.

11. Training Requirements and Competency Assessment

Training shall be provided by EH&S for all potentially impacted employees, and their supervisors, working where environmental risk factors for heat illness are present. Training information shall include, but not be limited to:

- Environmental and personal risk factors for heat illness
- Procedures for identifying, evaluating, and controlling exposure to environmental risk factors for heat illness
- The importance of frequent consumption of hydrating fluids, up to 1 quart (4 cups of water) per hour, when environmental risk factors for heat illness are present. Particularly when the employee is excessively sweating during the exposure
- The importance of acclimatization
- Different types of heat illness and the common signs and symptoms of heat illness
- The importance of immediately reporting symptoms or signs of heat illness, in themselves or in co-workers, to their supervisor

UCR Heat Illness Protection Program

- Understanding the procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by emergency medical service
- Procedures for ensuring that, in the event of an emergency, clear and precise directions to the work site can and will be provided to emergency responders

Supervisors shall receive training on the following topics in addition to the above list prior to being assigned to supervise outdoor employees:

- The training information required of the employees, detailed above
- Procedures supervisors are to follow to implement the provisions of this program
- Procedures the supervisor shall follow when an employee exhibits symptom consistent with possible heat illness, including emergency response procedures

Retraining will be required under any of the following conditions:

Annual retraining is encouraged but not required unless one of the conditions listed below is met. Periodically, EH&S may assign training to teams as an update or to refresh the information as part of a safety initiative. If the training is assigned it is required.

- Changes to regulatory requirements or UCR policy that needs to be communicated
- Changes in the workplace render previous training obsolete or inadequate
- Inadequacies in an employee's knowledge of heat illness prevention indicate that the employee has not retained the required information and heat stress management strategies
- If the training is assigned by the supervisor or EH&S it is required.
- UCR online heat illness training is always available in the UC Learning Center here: [Heat Illness](#)

Training records shall be maintained by EH&S for a minimum of 3 years beyond employment.

12. Information and External References

UCR Main Campus Worksite Specific Heat Illness Prevention Plan

<https://live-ucr-ehs.pantheonsite.io/document/main-campus-ws-heat-illness-prevention-plan>

UCR Outdoor Worksite-Specific Heat Illness Prevention Plan Template

<https://live-ucr-ehs.pantheonsite.io/document/ucr-outdoor-worksite-specific-heat-illness-plan>

UCR Indoor Worksite Specific Heat Illness Prevention Plan Template

<https://live-ucr-ehs.pantheonsite.io/document/ucr-indoor-location-worksite-specific-heat-illness-prevention-plan>

Worksite Heat Illness Prevention Compliance Checklist

<https://live-ucr-ehs.pantheonsite.io/document/ucr-heat-illness-prevention-compliance-checklist>

Cal/OSHA Heat Illness Prevention

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

Title 8 California Code of Regulations, General Industry Safety Orders, Outdoor Heat Illness Prevention - §3395

<https://www.dir.ca.gov/title8/3395.html>

Title 8 California Code of Regulations, General Industry Safety Orders, Indoor Heat Illness Prevention - §3396

<https://www.dir.ca.gov/Title8/3396.html>

Heat Illness Prevention: What you need to know

<http://www.99calor.org/downloads/factsheet.english.pdf>
<http://www.99calor.org/downloads/factsheet.spanish.pdf>

Heat Illness Prevention Enforcement Q&A

UCR Heat Illness Protection Program

<http://www.dir.ca.gov/dosh/heatIllnessQA.html>

Protect Yourself from Heat Illness Cards

http://www.dir.ca.gov/dosh/dosh_publications/HeatIllnessEmployeeEngSpan.pdf

OSHA-NIOSH Heat Safety Tool App

<https://www.cdc.gov/niosh/topics/heatstress/heatapp.html>

CDC-NIOSH Heat Stress Resources

<https://www.cdc.gov/niosh/topics/heatstress/default.html>

CDC Poster

https://www.cdc.gov/niosh/docs/2016-151/pdfs/fy16_heat-related-illness-poster_2016-151.pdf

CDC Infographic

<https://www.cdc.gov/niosh/topics/heatstress/infographic.html>

CDC Protect Yourself from Heat Stress Podcast

<https://tools.cdc.gov/medialibrary/index.aspx#/media/id/303858>

National Ag Safety Database: Keep Cool

<https://nasdonline.org/182/d000004/keep-cool.html>

Heat Illness Prevention Main Campus Outdoor Specific Plan

Supervisors must complete this form and share with employees

General Information

Location: Main campus outdoor areas

Supervisor/PI: [Click to enter text](#)

Created by: EH&S Safety **Date of plan creation:** 10/3/2024

Plan in effect when temperature is over 80 degrees Fahrenheit or higher as reported by the [National Weather Service](#).
Heat wave alerts will be sent out through the campus notification system when they are in effect.

Requirement: Provide Access to cool clean drinking water

Employees must have access to clean cool, potable water free of charge. Water must be suitably close to the areas they are working. Please explain how your department manages access to water for employees.

Plan: On main campus cool water is readily available:

- Most buildings are unlocked during the day and have drinking fountains and bottle fillers. In most cases this is an adequate source for employees. Supervisors should remind employees what buildings are closest to their work areas.
- Access to water must be within a 5-minute walk of the work location.

If none of the above is feasible, describe below how you plan to meet the requirements. If you need assistance, contact EH&S.

[Click to enter text](#)

Requirement: Provide Shade and Breaks

Employees must have access to one or more shade areas below 80 degrees Fahrenheit, out of direct sunlight, away from radiant heat sources, and within 5 minutes walking distance. The area must be large enough to accommodate all workers in need of a rest, have seating, and a supply of cool water. Employees must be allowed to take cooling breaks as needed.

Plan: On main campus shade and air-conditioned buildings are accessible:

- All building interior lobbies may be used for shade and cooling rest areas. Other rooms that are vacant like conference rooms can also be used. Please be respectful of building occupants.
- Exteriors of buildings on shaded sides, awnings, trees, other covered areas may be used for shade as needed.
- In some cases where a building or shade cover is not nearby, a vehicle with air conditioning or a pop-up tent may be used for shade.

If none of the above is feasible, describe below how you plan to meet the requirements. If you need assistance, contact EH&S.

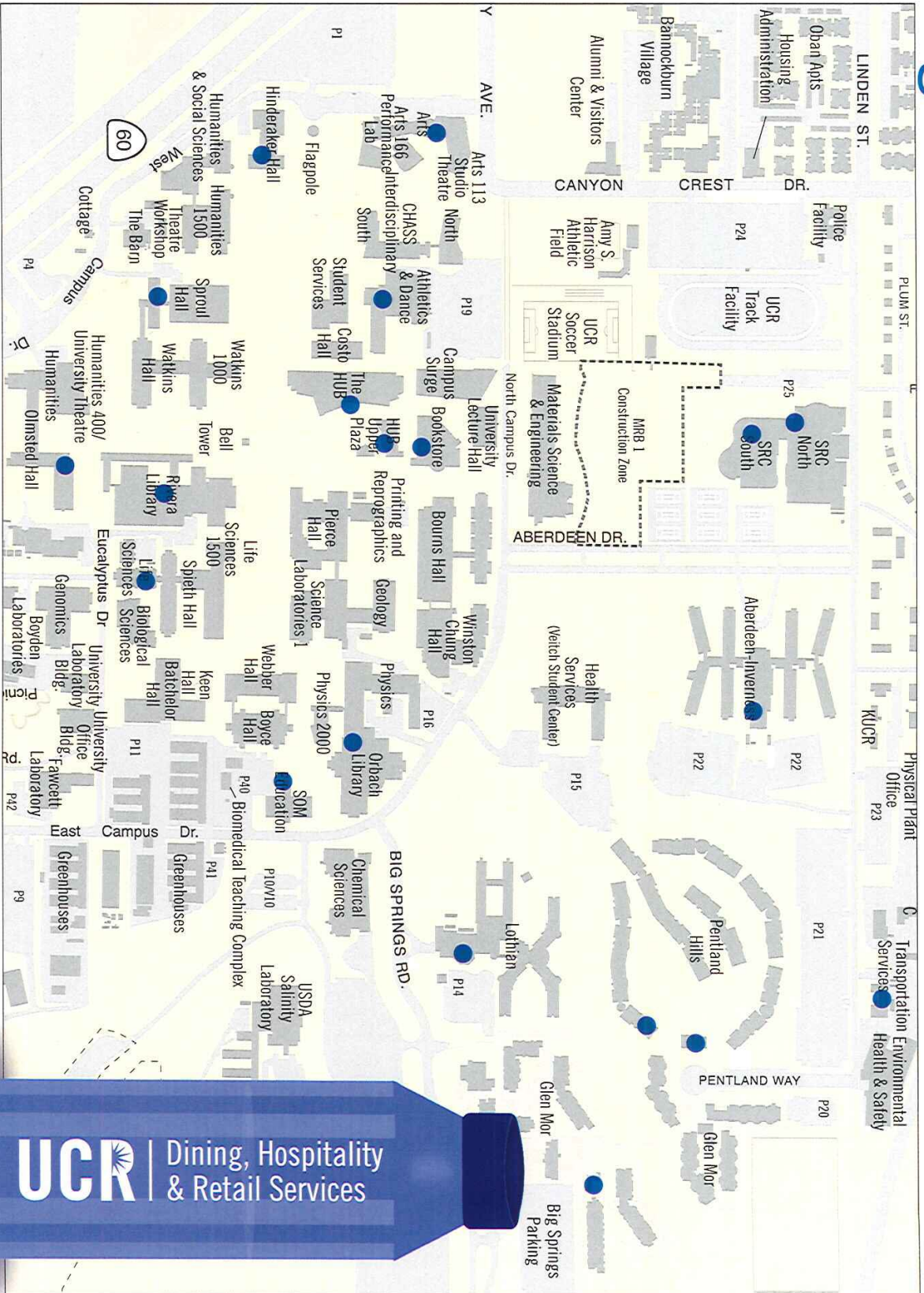
[Click to enter text](#)

Heat Illness Prevention Main Campus Outdoor Specific Plan

Supervisors must complete this form and share with employees

<p>Requirement: Workers must be monitored during cooling breaks and when a heat wave is in effect. Supervisors or their designees must monitor employees during cooling breaks to look for signs and symptoms of heat illness. If employees are noted to have symptoms they must act, assist the employee, and if necessary call 911.</p>
<p>Plan: Supervisors and employees will monitor and communicate throughout the work day.</p> <ul style="list-style-type: none"> Employees must notify their supervisor when they need to take a cool-down break. Supervisors or their designee must check with the employees and look for symptoms of heat illness. Checks can also be done in via radio, cell phone, or text on regular intervals of no more than 60 minutes. Workers should not work alone and teams should be encouraged to check on each other. Employees should take breaks as often as needed to avoid overheating.
<p>If none of the above is feasible, describe below how you plan to meet the requirements. If you need assistance, contact EH&S.</p>
<p>Click to enter text</p>
<p>Requirement: New or newly assigned employees must be given an opportunity to acclimate to the heat. Supervisors must modify work activities to provide a gradual increase in outdoor heat exposure. Employees must be provided up to 14 days to acclimate and during this break-in period supervisors must closely observe and monitor the employee's condition. The intensity of the work should also be moderated during this time.</p>
<p>Plan: Supervisors will adapt employee's work tasks and schedules to allow a 14-day acclimatization period.</p> <ul style="list-style-type: none"> Supervisors must develop a plan with new or newly assigned employees to meet their needs. Employees are allowed to take breaks as often as needed to cool-down in the shade. Supervisors or their designees will closely monitor new or newly assigned employees while they are working to look for signs of heat illness.
<p>If none of the above is feasible, describe below how you plan to meet the requirements. If you need assistance, contact EH&S.</p>
<p>Click to enter text</p>
<p>Requirement: Emergency response must be initiated if employees are experiencing symptoms of heat illness First aid must be initiated for employees with symptoms and if necessary 911 called promptly.</p>
<p>Plan: Supervisors and employees are trained to identify symptoms, provide heat illness first-aid, and when to call 911.</p> <ul style="list-style-type: none"> UCRPD can respond within minutes to begin care when 911 is called. Riverside Fire Paramedic's average response time to campus is about 10 minutes. Water and shade to initiate cooling is available all across main campus.
<p>If none of the above is feasible, describe below how you plan to meet the requirements. If you need assistance, contact EH&S.</p>
<p>Click to enter text</p>

A guide to refillable water stations at UCR



● Water Refill Station Know where other refillable water stations are located? Please email mkaplan@ucr.edu.

UCR | Dining, Hospitality & Retail Services

Summer's coming.

Extremely hot weather can cause sickness or even death.

WHAT TO WATCH FOR

Heat exhaustion
symptoms can include:



Heavy Sweating

Feeling Weak or Confused



Dizziness

Nausea



Headache

Cold, clammy skin



Fast, weak heartbeat

Heatstroke
symptoms can include:



Lack of sweating

Confusion,
disorientation, staggering



Red, hot, and dry skin

Throbbing headache



Nausea and vomiting

Rapid heartbeat



Rapid, shallow breathing

Sources: The American Red Cross, American Academy of Family Physicians.

Drink plenty of water and stay cool!





Sample Work/Rest Schedule for Workers Wearing Normal Clothing*

The NIOSH work/rest schedule is based on air temperature, with adjustments for direct sunlight and humidity. It may not be applicable to all worksites. Other work/rest schedules are available, some of which are based on Wet Bulb Globe Temperature.

See reverse for temperature adjustments for the NIOSH work/rest schedule and examples of light, moderate, and heavy work.

Things you need to know:

- Continuous work in the heat is not advisable—you must take rest breaks periodically to allow your body to cool down.
- A variety of work/rest schedules are available that can be adapted to your worksite. Relying on self-pacing alone may not be sufficient.

Temperature (°F)	Light Work Minutes Work/Rest	Moderate Work Minutes Work/Rest	Heavy Work Minutes Work/Rest
90	Normal	Normal	Normal
91	Normal	Normal	Normal
92	Normal	Normal	Normal
93	Normal	Normal	Normal
94	Normal	Normal	Normal
95	Normal	Normal	45/15
96	Normal	Normal	45/15
97	Normal	Normal	40/20
98	Normal	Normal	35/25
99	Normal	Normal	35/25
100	Normal	45/15	30/30
101	Normal	40/20	30/30
102	Normal	35/25	25/35
103	Normal	30/30	20/40
104	Normal	30/30	20/40
105	Normal	25/35	15/45
106	45/15	20/40	Caution
107	40/20	15/45	Caution
108	35/25	Caution	Caution
109	30/30	Caution	Caution
110	15/45	Caution	Caution
111	Caution	Caution	Caution
112	Caution	Caution	Caution

Example
A worker performing heavy work in 104 °F temperatures should work for 20 minutes and rest for 40 minutes.

Example
A worker performing moderate work at 108 °F should use extreme caution! The risk for heat injury is high in this situation.

* From NIOSH Criteria for a Recommended Standard, Occupational Exposure to Heat and Hot Environments, <https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf>. **Assumptions:** workers are physically fit, well-rested, fully hydrated, under age 40, and environment has 30% humidity and perceptible air movement.

HEAT STRESS **Work/Rest Schedules**

Temperature Adjustments for this Work/Rest Schedule

Adjust the temperature in the table based on:

Environmental conditions	AND	Humidity
<ul style="list-style-type: none"> • Full sun (no clouds): Add 13 °F • Partly cloudy/overcast: Add 7 °F • No shadows visible, in the shade, or at night: No adjustment 		<ul style="list-style-type: none"> • 40% humidity: Add 3 °F • 50% humidity: Add 6 °F • 60% humidity or more: Add 9 °F
<p>Example Adjustment Conditions at a mine are 90 °F, with partly cloudy skies and 50% humidity. Adjust the table as follows: Add 7 °F for partly cloudy skies and 6 °F for 50% humidity, to arrive at 103 °F.</p>		



Photo by ©Thinkstock

Examples of Work at Different Intensity Levels

Light work

- Operating equipment
- Inspection work
- Walking on flat, level ground
- Using light hand tools (wrench, pliers, etc.). However, this may be moderate work depending on the task
- Travel by conveyance

Moderate work

- Jack-leg drilling
- Installing ground support
- Loading explosives
- Carrying equipment/supplies weighing 20–40 pounds
- Using hand tools (shovel, fin-hoe, scaling bar) for short periods

Heavy work

- Climbing
- Carrying equipment/supplies weighing 40 pounds or more
- Installing utilities
- Using hand tools (shovel, fin-hoe, scaling bar) for extended periods

Case Study: Use of Work/Rest Schedule

A crew was shoveling ore out from under the primary conveyor at a surface mine in Arizona in August. The high temperature that day was 113 °F. The crew was rotating in 10-minute shifts and hydrating between shifts. Coworkers noticed signs of heat illness in two employees, and they were transferred to the medical station for evaluation. From there they were sent to the hospital, where they were given IV saline and released home. Both employees recovered after rehydration at the hospital.

Lessons Learned

In extreme heat, even a work/rest schedule may not eliminate the risk of heat illness. In this case, use of work/rest schedules, frequent hydration, and team monitoring helped keep this situation from becoming even more serious. Without those safety precautions the workers could have potentially suffered more severe heat illness, possibly including heat stroke, which is life threatening.

DEPARTMENT OF HEALTH AND HUMAN SERVICES
 Centers for Disease Control and Prevention
 National Institute for Occupational Safety and Health

DHHS (NIOSH) Publication No. 2017-127



NOAA's National Weather Service

Heat Index

Temperature (°F)

		80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	
Relative Humidity (%)	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136	
	45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137		
	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137			
	55	81	84	86	89	93	97	101	106	112	117	124	130	137				
	60	82	84	88	91	95	100	105	110	116	123	129	137					
	65	82	85	89	93	98	103	108	114	121	128	136						
	70	83	86	90	95	100	105	112	119	126	134							
	75	84	88	92	97	103	109	116	124	132								
	80	84	89	94	100	106	113	121	129									
	85	85	90	96	102	110	117	126	135									
90	86	91	98	105	113	122	131											
95	86	93	100	108	117	127												
100	87	95	103	112	121	132												

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

- Caution
- Extreme Caution
- Danger
- Extreme Danger