

Heat Illness Prevention Plan



California State University, Chico

Department of Environmental Health and Safety

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Heat Illness Prevention Plan Record of Revisions

Revision	By	Date	Description of Revision
1	YS	5-04-2020	Completed review and updated. Added new sections: Heat Rash, Syncope, and Rhabdomyolysis.

Legend:

YS: Yvette Streeter, Emergency Preparedness and Occupational Safety Manager

The purpose of the Heat Illness Prevention Plan is designed to meet the requirements as set forth in California Code of Regulations, Title 8, Subchapter 7, Group 2, Section 3395, and also to serve as a supplement to California State University, Chico's Injury and Illness Prevention Program (IIPP). This Plan is intended to be used in conjunction with the IIPP.

The Heat Illness Prevention Plan provides information and establishes procedures which are necessary to ensure that members of the University Community are knowledgeable in the prevention, recognition, and emergency procedures required for preventing and properly responding to a heat related illness.

This document provides information about the types of heat illness and how employees can prevent the occurrence, as well as provides information regarding the signs and symptoms, and what first aid actions to take, including when to seek emergency medical treatment.

The Chico area has frequent high temperatures from June through September, with the occasional occurrence of higher temperatures as early as May. Some CSU, Chico employees can anticipate exposure to high heat conditions which can result in heat related illness. Any employee whose job duties require them to work in the outdoors during summer months are exposed to the seasonal elevated heat conditions, and therefore, may be susceptible to one or more forms of heat illness.

Heat related illnesses can occur when physical activities are performed in hot weather. If the body overheats, it can no longer cool itself, and the body temperature rises beyond healthy levels. Contributing factors to heat illness include, but are not limited to, the following:

- Environmental risk factors such as air temperature, humidity, and radiant heat from the sun. Bulky or heavy protective clothing (PPE) and head coverings are also a factor.
- Personal risk factors such as the individual's level of acclimatization (ability to become accustomed) to heat, their age, health, and overall physical condition. Supplements and prescription medications may also increase personal risk factors.
- Failure to stay properly hydrated by drinking adequate amounts of water prior to, during, and after working in the heat is a significant contributing factor.

Heat related illnesses are preventable by becoming aware of contributing factors and taking appropriate steps before, during, and after working in either indoor or outdoor high temperature environments. Acclimatization is one of the most significant forms of prevention, along with proper hydration.

2.1 Types of Heat Illness

Heat related illnesses include heat rash, heat cramps, heat syncope, heat exhaustion, and heatstroke. A lesser known form of potentially serious heat illness is Rhabdomyolysis. Many workers do not recognize the onset of heat related illness and continue to work; therefore, it is critical that all employees know the signs and symptoms of all forms of heat illness. Rhabdomyolysis and heatstroke should be treated as serious life-threatening medical emergencies and must be responded to quickly and properly.

2.2 Heat Rash

Heat rash is a skin irritation caused by excessive sweating during hot, humid weather.

Signs and Symptoms

- Itchy or painful red clusters of pimples or small blisters that usually appear on the neck, upper chest, groin, under the breasts, and in elbow creases.
- Heat rash may appear on other areas of the body as well.

Prevention

- Wear lightweight, breathable fabrics, if possible.
- During break periods loosen clothing to increase air flow.
- If possible, alternate tasks during the day to allow work in a cooler, less humid work environment.

First Aid

- Keep rash area dry.
- Apply powders to reduce chafing and increase comfort.
- Avoid scratching and breaking the skin as infection may occur.
- Ointments and creams should not be used and can make the rash worse.

Heat rash, while uncomfortable, does not constitute a medical emergency.

2.3 Heat Cramps

Heat cramps are the most common type of heat related illness. Heat cramps are caused by heavy perspiration, especially when fluids and electrolytes are not replaced quickly enough. Employees are most at risk during the first few days of hot weather as a person may not yet be accustomed (acclimated) to the heat. Heat cramps can occur despite acclimatization, especially if work is more strenuous than usual and hydration is not adequate.

Signs and Symptoms

- Painful brief muscle cramps of the calves, thighs, stomach muscles, or shoulders during work or exercise in a hot environment.
- Painful cramps hours later after working in a hot environment.

Prevention

- Become acclimated: acclimatization peaks in most people within four (4) to 14-days of regular work for at least two-hours per day in the heat.
- Drink cool, clean water often and throughout the day, up to a quart per-hour if your work involves physical labor and you are perspiring heavily.
- You may choose to augment water intake with electrolyte solutions such as Gatorade.
- Avoid alcohol and caffeinated beverages, including energy drinks.
- Know that some common supplements and prescription medications may affect your overall ability to stay hydrated. Discuss this with your personal physician, if needed.

First Aid

- If heat cramps occur, stop working and move to a shaded area or air-conditioned building, if possible.
- If heat cramps occur begin to increase drinking water and/or electrolyte beverages; do not drink soda or energy drinks.
- Contact your supervisor immediately. You may need to stop or reduce work activities until you have replaced the fluids lost through perspiration.
- Rest and take extra steps to re-hydrate.

Although heat cramps can be quite painful, they usually do not result in permanent damage.

2.4 Heat Syncope

Heat syncope is when a person experiences light headedness, dizziness, or a short period of fainting during or after standing for prolonged periods or when suddenly rising from a sitting or lying position. Dehydration and a lack of acclimatization may contribute to the onset of heat syncope.

Signs and Symptoms

- Feeling dizzy or lightheaded after standing up from sitting or lying down.
- Fainting (briefly) after standing up from sitting or lying down.

Prevention

- Become acclimated: acclimatization peaks in most people within four (4) to 14-days of regular work for at least two-hours per day in the heat.
- Drink cool, clean water often and throughout the day, up to a quart per-hour if your work involves physical labor and you are perspiring heavily.
- You may choose to augment water intake with electrolyte solutions such as Gatorade.
- Avoid alcohol and caffeinated beverages, including energy drinks.
- Know that some common supplements and prescription medications may affect your overall ability to stay hydrated. Discuss this with your personal physician, if needed.

First Aid

- If you experience dizziness or feel lightheaded, immediately sit or lie down in a cool location.
- Increase drinking of water until symptoms cease.
- Contact your supervisor immediately if you continue to feel unwell.
- Stop or reduce work activities until you feel better.

2.5 Rhabdomyolysis

Rhabdomyolysis is a medical condition associated with heat stress and prolonged physical exertion, resulting in the rapid breakdown, rupture, and death of muscle. When muscle tissue dies, electrolytes and large proteins are released into the bloodstream that can cause irregular heart rhythms, seizures, and damage the kidneys.

Signs and Symptoms

- Muscle cramps/pain.
- Abnormally dark (tea or cola colored) urine.
- Weakness.
- Exercise intolerance.
- May be asymptomatic (no symptoms such as muscle cramps/pain).

Prevention

- Become acclimated: acclimatization peaks in most people within four (4) to 14-days of regular work for at least two-hours per day in the heat.
- Drink cool, clean water often and throughout the day, up to a quart per-hour if your work involves physical labor and you are perspiring heavily.
- You may choose to augment water intake with electrolyte solutions such as Gatorade.
- Avoid alcohol and caffeinated beverages, including energy drinks.
- Decrease the amount of physical labor, alternate with less strenuous tasks.
- Take extra rest and water breaks in a cooler environment such as the shade or in an air-conditioned building until you become acclimated (accustomed) to the heat.

First Aid

- Stop work, move to a cooler location.
- Increase hydration (water preferred).
- Seek immediate care at the nearest medical facility, call 911 if needed.
- Notify your supervisor immediately.
- Ask to be checked for rhabdomyolysis (i.e., blood sample analyzed for creatine kinase).

2.6 Heat Exhaustion

Heat exhaustion is more serious than heat cramps and will occur when a person can no longer perspire enough to cool the body. The body's internal temperature regulating system is overworked but has not completely shut down.

Signs and Symptoms

- Heavy sweating, intense thirst, and dizziness.
- Feeling weak or exhausted, even after resting.
- Nausea and/or headache.
- Pale, cool and moist (clammy) skin.

Some or all the signs and symptoms may be present. Mild heat exhaustion does not change a person's mental alertness.

Prevention

- Become acclimated: acclimatization peaks in most people within four (4) to 14-days of regular work for at least two-hours per day in the heat.
- Drink cool, clean water often and throughout the day, up to a quart per-hour if your work involves physical labor and you are perspiring heavily.
- You may choose to augment water intake with electrolyte solutions such as Gatorade.
- Avoid alcohol and caffeinated beverages, including energy drinks.
- Take extra rest and water breaks in a cooler environment such as the shade or in an air-conditioned building until you become acclimated (accustomed) to the heat.
- When working outdoors wear ventilated hats with wide brims, if possible, and long-sleeved light-colored clothing.

First Aid

- A person showing symptoms of heat exhaustion should be moved to a cool location such as a shaded area or air-conditioned building.
- Provide cool water or an electrolyte drink such as Gatorade.
- If the person is dizzy, have them lie down with their feet slightly elevated.
- Remove hats and loosen the person's clothing.
- Apply cool, wet cloths to the head, back of neck, and abdominal area if possible.
- People with heat exhaustion should avoid strenuous activity for at least a day and should continue to drink plenty of water to replace lost body fluids.

Notify your supervisor immediately if you or another person show signs of heat exhaustion. It is important to understand that heat exhaustion can quickly progress to heatstroke. Dependent on the severity, medical treatment may be required. Immediately call 911 if the person's condition worsens, if they vomit repeatedly or if they lose consciousness.

2.7 Heatstroke

Heatstroke is a life-threatening illness and can be fatal if not immediately and properly treated. This condition occurs when the body has depleted its supply of fluids and can no longer cool itself. The person's core body temperature then can rise to levels that can damage major organs. A heatstroke victim may first suffer heat cramps and/or heat exhaustion before progressing into the heatstroke stage, however, this is not always the case.

Signs and Symptoms

- Strange behavior, confusion, agitation, and/or hallucinations.
- Difficulty breathing.
- Dry, hot, red, or flushed skin.
- The distinct absence of sweating and any or all of the signs and symptoms of heat exhaustion including dizziness, headache, nausea, or vomiting.
- Seizures and/or convulsions or loss of consciousness.
- Body temperature of 104° to over 106° degrees F.

Prevention

- Become acclimated: acclimatization peaks in most people within four (4) to 14-days of regular work for at least two-hours per day in the heat.
- Drink cool, clean water often and throughout the day, up to a quart per-hour if your work involves physical labor and you are perspiring heavily.
- You may choose to augment water intake with electrolyte solutions such as Gatorade.
- Avoid alcohol and caffeinated beverages, including energy drinks.
- Take additional 5 to 10-minute rest and water breaks in a cooler environment such as the shade or in an air-conditioned building until you become acclimated (accustomed) to the heat.
- When working outdoors wear ventilated hats with wide brims, if possible, and long-sleeved light-colored clothing.

Note: A person who has suffered heat exhaustion is more likely to fall victim to heatstroke.

First Aid

- Make sure someone has called 911 and notify your supervisor or manager.
- Begin cooling the person: loosen or remove all excess clothing including hats, belts, socks and shoes.
- If possible, use a hose or pour cool water over the person's body.
- If possible, apply cold packs to the person's abdomen and groin area.
- Fan the person, use any reasonable means to cool the body.
- Do not try to provide anything to drink if the person is not fully alert, you may cause choking.
- Do not provide any medications, salt tablets, etc.

3.0

HEAT ILLNESS PRECAUTIONS - SUMMARY

Acclimatization is one of the most important factors in preventing heat illness; you must gradually condition yourself to working in hot environments. By performing regular work for at least two-hours per-day in the heat, *most* people will become accustomed (acclimated) to the heat in four (4) to 14-days.

It is important to modify your pace of activity until you are fully acclimated; pace yourself and perform more strenuous tasks earlier in the day.

Everyone has their own level of acclimation and heat tolerance, as well as, may have increased personal risk factors. It is important to know that some supplements, over the counter, and some prescription medications can interfere with the body's ability to retain water and tolerate heat.

Your overall health including your age, weight, and general physical condition may also affect your ability to acclimate and tolerate heat. If needed, discuss your personal risk factors and acclimatization with your physician.

Once temperatures reach or exceed 80° degrees Fahrenheit, take additional minimum 5-minute rest and cooling breaks to avoid overheating until you are acclimated. Take your breaks in the shade or indoors, rest and drink water before returning to work. Drink water throughout the day.

Drink plenty of liquids. Hydration is a continuous process, drinking water before and after working is just as important as drinking water while working. Don't wait until you are thirsty; if you do there is a possibility that you may already be dehydrated. Supplementing water occasionally with Electrolyte drinks will help to replace both water and minerals lost through sweating.

Avoid excessive use of alcohol during time off, and limit or avoid caffeinated beverages such as coffee, energy drinks, and soda as these liquids can have an opposite effect and can also contribute to the level of dehydration.

It is your responsibility to talk to your supervisor if you have been off work and are returning during hot weather, been in a much cooler environment, or have had a change in work activities, locations, or health conditions as this may increase the potential for heat related illness. It does not take long to lose acclimatization. You will need to gradually acclimate, depending on your overall physical condition, the work you will perform, and current and predicted outdoor temperatures into consideration.

Employees must notify their supervisor immediately if feeling unwell due to working in high heat environments or are showing signs and/or symptoms of any heat related illness.

Warning! During high heat or a heat wave even previously acclimatized employees are at risk for heat illness because the body has not had enough time to adjust to sudden, abnormally high temperatures or other extreme conditions such as high humidity.

4.0 EMPLOYER PROVISIONS FOR PREVENTING HEAT ILLNESS

4.1 Acclimatization

All employees shall be closely observed by a supervisor or manager or designee during a heat wave. For the purpose of heat illness prevention, heat waves are days when the predicated high temperature is at least 80° degrees Fahrenheit and 10-degrees higher than the average high temperature in the preceding five-days.

To ensure employees become properly acclimated, all employees who have been newly assigned to high heat work areas shall be closely observed by a supervisor or designee for the first 14-days of employment. Best practices include finding ways to lessen the intensity of work during a heat wave and during 2-week break-in periods of new employees.

Warning! During a heat wave even previously acclimated employees are at a risk for heat illness because the body has not had enough time to adjust to sudden, abnormally high temperatures or other extreme conditions such as high humidity.

4.2 Access to Shade and Rest

Shade and preventative rest breaks will be provided to employees when the temperature exceeds 80° degrees F.

The CSU, Chico campus has numerous naturally shaded areas throughout the campus, as well as, air-conditioned buildings within easy access of employees. Employees will be reminded and encouraged to take water and allowed to take preventive cool-down rest breaks (minimum of five minutes) in the shade or inside nearby air-conditioned buildings as needed to protect themselves from overheating and to prevent heat illness from occurring.

Employees requesting preventative rest breaks shall be:

- Monitored and asked if they are experiencing symptoms of heat illness.
- Be encouraged to remain in the shade.
- 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.
- 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 call 911.

Where natural shade is not available, workers will be provided with nearby portable shade canopies in which they may take breaks. Shade canopies will be of an adequate size to accommodate employees on recovery or rest periods as well as meal periods if workers choose to remain onsite during their meal period. Shade canopies will be open to the air or be provided with ventilation.

Shade will be provided within a reasonable amount of time upon employee request at temperatures below 80° degrees F.

4.3 Access to Water

Fresh, pure, and reasonably cool potable water will be made available to employees at no cost.

There are drinking fountains inside all CSU, Chico buildings, as well as, some exterior drinking fountains.

Employees who travel in vehicles throughout campus are encouraged to utilize portable water containers and may refill them from potable water sources in buildings.

When employees are in locations that do not have potable water available, supervisors or managers will ensure that fresh, pure, and reasonably cool clean water is readily available at all times and in quantities sufficient for the number of employees throughout the shift if water is not to be replenished throughout the day.

Note: Exterior hose bibs do not necessarily provide potable water and are not be used.

4.4 High Heat Procedures

These procedures apply to agricultural workers, construction workers, landscapers and other specific groups when outdoor temperatures equal or exceeds 95° degrees F. However, any employee who performs outdoor work may be reasonable anticipated to be at risk of heat illness in temperatures above 80° degrees F.

Managers and supervisors or their designee will monitor outdoor temperatures and conditions such as humidity throughout the day so they may provide shade and water as needed. Employees shall be provided with a reliable means of communication to reach their supervisor or summon medical aid. Managers and supervisors shall also effectively observe workers throughout the day for alertness and any signs or symptoms of heat illness.

Employee observation/monitoring shall be achieved by implementing *one or more* of the following methods:

- Supervisor or designee direct observation of no more than 20 employees.
- Implement a mandatory buddy system.
- Maintain regular communication with lone workers by radio or cell phone.
- Provide other effective means of communication.

Managers and supervisors shall also designate one or more employees at each worksite as authorized to call for emergency services.

Note: Any CSU, Chico employee is allowed and is encouraged to call for emergency services as needed.

New employees, including those performing new tasks, or who have changed positions will be regularly observed by a supervisor or designee for signs and symptoms of heat illness for up to 14-days to verify they have properly acclimated to the current or predicted weather conditions.

Pre-shift meetings shall be held to remind and encourage employees to drink plenty of water throughout the work shift, remind them of their right to take cool down rest when necessary and to review the high heat and emergency procedures. Prevention, recognition, and appropriate responses to heat illness signs and symptoms should be reviewed regularly.

4.5 Additional Requirements for Agricultural Workers

When temperatures equal 95° degrees or above, the agricultural work site employer shall ensure that employees take a minimum 10-minute net preventative cool down rest period every two-hours.

The additional 10-minute preventative cool down rest period may be provided concurrently with meal or rest periods. If the work day exceeds eight (8) hours an additional preventative cool rest period would be required at the end of the eighth-hour of work; and if the workday extends beyond 10-hours, then another preventative cool-down rest period will be required at the conclusion of the tenth-hour and so on.

These breaks must be taken, not only offered, in addition to rest breaks as required by Industrial Welfare Order No.14.

Supervisors and managers shall respond to signs and symptoms of possible heat related illnesses by providing first aid measures as outlined in this Plan. If a supervisor or manager observes, or any employee reports, any signs or symptoms of heat illness, the supervisor or manager shall take immediate action commensurate with the severity of the illness.

Employees showing signs or symptoms of heat illness shall be monitored and not be left alone or sent home without first being offered first aid and/or being provided with emergency medical services.

All employees are must be familiar with the first aid procedures in this Plan and be encouraged to follow them until medical help arrives.

If severe heat illness signs or symptoms are observed or reported, emergency services can be immediatly summoned by:

- Using emergency “blue light” call boxes located at exterior locations on campus.
- Calling 911 from any campus building phone or call (530) 898-5555 from a cell phone.
- Calling 911 when working in locations such as the farm or other more remote off campus locations.

If 911 is called, be sure to provide clear directions to the location of the affected worker, and if needed, provide a person to direct emergency responders to the correct location. If applicable, detailed directions including maps must be available to first responders to avoid any delay in treatment.

Many employees also have been provided with two-way radios they can use to reach their supervisor or department office.

Departments may provide additional procedures for employees to follow in addition to calling 911. If this is the case, employees must be provided with documented training to ensure they understand the procedures.