Heat Illness Prevention Plan



Department of Environmental Health and Safety

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Heat Illness Prevention Plan Record of Revisions

Revision	Ву	Date	Description of Revision
1	CD	7/24/2024	Established a new plan to replace the 09/02/2022 online document and add an indoor heat illness section.

Legend:

CD: Craig Dawson, EH&S Manager

1.0 PURPOSE

The purpose of the Heat Illness Prevention Plan is designed to meet the requirements as setforth in California Code of Regulations, Title 8, Subchapter 7, Group 2, Sections 3395 and 3396 and also to serve as a supplement to California State University Maritime Academy's Injury 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 necessary to ensure that members of the University Community know 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 their occurrence. It also provides information regarding the signs and symptoms and what first aid actions to take, including when to seek emergency medical treatment.

High temperatures are usually buffered compared to inland areas, due to prevailing winds from the San Pablo Bay. Any employee whose job duties require them to work 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.

Conversely, employees who work indoors can also be susceptible to heat illness. This document provides information about how and when Indoor Heat Illness protocols should be in place. Indoor work environments can include but are not limited to offices, warehouses, shops, outbuildings, and vehicles.

Heat-related illnesses can occur when physical activities are performed in hot weather conditions. 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, 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 before, 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. OSHA and NIOSH recommend the "Rule of 20 percent" to build the employee's tolerance to heat (osha.gov):

- 20 percent First Day: New workers should work only 20 percent of the normal duration on their first day.
- 20 percent Each Additional Day: Increase work duration by 20 percent on subsequent days until the worker is performing a normal schedule.

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 cooler, less humid work environments during the hotter portion of the day.

First Aid

- Keep the 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, as they 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 <u>not</u> 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. If possible, lie down with your feet slightly elevated.
- 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 week 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 <u>not</u> 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 airconditioned 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 <u>and any or all</u> 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.

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 twohours 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 and 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 rests 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 the opposite effect and can 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, have 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 and consider; your overall physical condition, the work you will perform, and current and predicted outdoor temperatures.

Employees must notify their supervisor immediately if they are 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 OUTDOOR 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 Maritime 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.

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 Maritime 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.

4.4 High Heat Procedures

These procedures apply to construction workers, landscapers, and other specific groups when outdoor temperatures equal or exceed 95° degrees F. However, any employee who performs outdoor work may be reasonably 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.

Note: Any CSU Maritime 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 review the high heat and emergency procedures. Prevention, recognition, and appropriate responses to heat illness signs and symptoms should be reviewed regularly.

5.0 EMPLOYER PROVISIONS FOR PREVENTING INDOOR HEAT ILLNESS

5.1 Standards for Implementing Indoor Heat Illness Prevention Protocols

For indoor workplaces where the temperatures are equal to or greater than 87° degrees Fahrenheit*, employers must take steps to protect workers from heat illness. Requirements include, but are not limited to, providing water, rest, cool-down areas, methods for cooling down the work area when certain conditions are present, and training (www.dir.ca.gov/dosh/heat-illness/indoor.html).

Note: If employees are required to wear clothing that inhibits heat removal, such as personal protective equipment (PPE), the trigger temperature is 82° degrees Fahrenheit.

5.2 Acclimatization

Employees shall be closely observed by a supervisor or manager or designee during a 14-day acclimatization period when working indoors, where temperatures meet or exceed 87° Fahrenheit.

5.3 Provide clean drinking water

Employers must provide access to potable water that is fresh, suitably cool, and free of charge. The water must be located as close as possible to the work areas and the cool-down areas.

5.4 Access to cool-down areas

Access to a minimum of one cool-down area must be provided. The cool-down area must be:

- 1. kept at a temperature below 82° degrees Fahrenheit
- 2. shielded from direct sunlight and other high-radiant heat sources
- 3. large enough to accommodate the number of workers on rest breaks so they can sit comfortably without touching each other
- 4. as close as possible to the work areas

5.5 Cool-down rest periods

Workers should be encouraged to take preventative cool-down rest periods and must be allowed to take them as needed. Workers who experience symptoms of heat-related illness should notify their supervisor or coworker and shall be monitored until symptoms are abated.

5.6 Assessment, control measures, and monitoring weather

Temperatures and the heat index should be measured, and the greater result should be recorded when the temperature or heat index reaches 87° Fahrenheit or when the temperature reaches 82° Fahrenheit for workers working in clothing that restricts heat removal.

Feasible engineering controls must be implemented first. Examples include, but are not limited to, using air conditioners, evaporative coolers, fans, increasing the general ventilation, and utilizing local exhaust ventilation at high heat or high moisture production points.

Supervisors overseeing workers working in indoor workspaces that are affected by the outdoor temperatures, will receive training on how to check weather reports and how to respond to hot weather advisories.

6.0

EMERGENCY PROCEDURES

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 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 immediately summoned by:

- Using emergency "blue light" call boxes located at exterior locations on campus.
- Call 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.

Comparison of Indoor and Outdoor Heat Illness Prevention Standards

Requirement	Outdoor Heat (T8CCR 3395)	Indoor Heat (T8CCR 3396)
Scope and Application	Applies to outdoor workplaces	Applies to indoor workplaces when the indoor temperature is greater than 82°F
Provide Clean Drinking Water	Provide access to potable water that is fresh, suitably cool, and free of charge. Located as close as possible to work areas.	Provide access to potable water that is fresh, suitably cool, and free of charge. Located as close as possible to work areas and cool-down areas.

Access to Shade and Cool-Down Areas	For outdoor workplaces, shade must be made available when temperatures are greater than 80°F. For indoor workplaces, provide access to at least one cooldown area which must be kept at a temperature below 82°F Shade and cool-down areas must be: Blocked from direct sunlight Large enough to accommodate the number of workers on rest breaks so they can sit comfortably without touching each other Close as possible to the work areas For indoor workplaces, the cool-down areas must be kept at less than 82°F and shielded from other high-radiant heat sources.		
Cool-Down Rest Periods	Encourage workers to take preventative cool-down rest breaks. Allow workers who ask for a cool-down rest period to take one. Monitor workers taking such rest periods for symptoms of heat-related illness.		
High-Heat Procedures	Have and implement procedures to deal with heat when the temperature equals or exceeds 95°F Procedures must include: Observing and communicating effectively with workers Reminding workers to drink water and take cooldown rest breaks	Not applicable to Indoor Workplaces	

Assessment and Control Measures	Not applicable to Outdoor Workplaces	Measure the temperature and heat index and record whichever is greater whenever the temperature or heat index reaches 87°F (or temperature reaches 82°F for workers working in clothing that restricts heat removal. Implement control measures to keep workers safe. Feasible engineering controls must be implemented first.	
Monitoring the Weather	Monitor outdoor temperature and ensure that once the temperature exceeds 80°F, shade structures will be opened and made available to the workers. When it is at least 95°F, implement high-heat procedures. Train supervisors on how to check weather reports and how to respond to weather advisories.	For indoor workplaces that are affected by outdoor temperatures, train supervisors on how to check weather reports and how to respond to hot weather advisories.	
Emergency Response Procedures	Provide first aid or emergency response to any workers showing signs or symptoms of heat illness, including contacting emergency medical services.		
Acclimatization	Closely observe new workers and newly assigned work working in hot areas during a 14-day acclimatization pe as well as all workers during a heat wave.		
Training	Employers must provide training to both workers and supervisors.		

Heat Illness Prevention Plan

Establish, implement, and maintain an effective written Outdoor Heat Illness Prevention Plan that includes procedures for providing drinking water, shade, preventative rest periods, close observation during acclimatization, high-heat procedures, training, prompt emergency response.

Establish, implement, and maintain an effective written Indoor Heat Illness Prevention Plan that includes procedures for providing drinking water, cool-down areas, preventative rest periods, close observation during acclimatization, assessment, and measurement of heat, training, prompt emergency response, and feasible control measures.