Heat Illness Prevention Program

The purpose of this plan is to protect our employees from the hazards associated with both indoor and outdoor heat-related illnesses potentially encountered by employees at our workplace. This program will be used to train all new hires and for annual refresher training of all employees.

Heat-related illnesses can happen if activities in a hot workplace environment overwhelm the body's ability to cool itself. The risk factors listed below increase the likelihood of an employee suffering from a heat-related illness.

Program Administrator(s)

The following designated person(s) has/have the authority and responsibility for implementing the provisions of this program at this worksite. They will be responsible for updating the program as needed to meet any applicable changes at the work site.

Name/Job Title/Phone Number

1.

2.

Risk Factors

The following are environmental risk factors for heat illness:

- Air temperature above 90 degrees F
- Relative humidity above 40 percent
- Direct Sun exposure
- Radiant heat from the sun and other sources
- Conductive heat sources such as dark-colored work surfaces
- Lack of air movement
- Physical effort needed for the work
- Use of non-breathable protective clothing and other personal protective equipment

The following are personal risk factors for heat illness:

- Lack of acclimation to warmer temperatures

- Medical conditions, or poor general health (e.g. obesity, diabetes, high BP, pregnancy & heart disease)
- Dehydration
- Alcohol consumption
- Drugs and use of some prescription medications can affect the body's water retention or other physiological responses to heat such as beta blockers, diuretics, antihistamines, tranquilizers, and antipsychotics.
- Caffeine consumption
- Previous heat-related illness

Heat-Related Illnesses

Heat rash - Heat rash is the most common health problem in hot work environments.

Signs and symptoms of heat rash include:

- Clusters of red bumps on the skin caused by sweating
- Often appears on the neck, upper chest, and skin folds

Heat exhaustion - Signs and symptoms of heat exhaustion typically include:

- Heavy or profuse sweating
- Muscle spasms or pain
- Irritability, weakness and fatigue
- Nausea and vomiting
- Headache
- Thirst
- Elevated body temperature or fast heart rate (101-104° F)
- Light-headedness or fainting

When you recognize heat exhaustion symptoms in an employee, you must intervene; stop the activity and move the employee to a cooler environment. Cooling off and rehydrating with water (or electrolyte replacing sports drinks) is the primary treatment for heat exhaustion. If the employee resumes work before their core temperature returns to normal levels, symptoms may quickly return. Without intervention at this stage, the body's temperature regulation fails, and heat exhaustion can rapidly progress to heat stroke, a life-threatening condition!

Heat stroke - Signs and symptoms of heat stroke typically include:

- Absence of sweating or hot, dry skin
- Confusion
- Agitation or strange behavior

- Slurred speech
- Very high body temperature (104°F-higher)
- Rapid heart rate
- Dizziness, disorientation, or lethargy
- Seizures or signs that mimic those of a heart attack

If Heat Stroke is suspected Call 911! It is essential that emergency responders are summoned immediately! While waiting for emergency responders to arrive, cool the employee by moving the employee to an air-conditioned environment or a cooler shady area. Remove or loosen any unnecessary clothing from the employee and apply cold towels or cloths to aid cooling. Do not leave the employee unattended. Heat stroke requires immediate medical attention to prevent permanent damage to the brain and other vital organs that can result in death.

Preventing Heat-Related Illnesses

Elements necessary for a fully protective and proactive Heat Illness Prevention Plan Include: Procedures for Weather Monitoring, Proper Hydration, Rest Periods Frequency, Access to Shade or Air-Conditioned Cooling Areas, Monitoring of Employees, Acclimatization and Emergency Procedures.

Procedures for Monitoring the Weather

Prior to each workday, the forecasted temperature and humidity for the worksite will be reviewed by the competent person in charge of the worksite. Forecasted conditions will be compared against the National Weather Service Heat Index to evaluate the risk level for heat illness. Determination will be made of whether or not employees will be exposed to a temperature and humidity characterized as either “extreme caution” or “extreme danger” for heat illnesses. It is important to note that the temperature at which these warnings occur must be lowered by as much as 15 degrees if the employees are working in direct sunlight. Additional steps, such as those listed below, will be taken to address these hazards.

http://www.nws.noaa.gov/, OSHA-NIOSH Heat Safety Tool App or a simple thermometer, available at most hardware stores) can be used to access conditions at the worksite. This critical weather information will be taken into consideration to determine when it will be necessary to make modifications to the work schedule (e.g., stopping work early, rescheduling the job, working at night or during the cooler hours of the day, increasing the number of water and rest breaks).

A thermometer will be used at the job site to monitor for a sudden increase in temperature to ensure rest periods and other prevention mechanisms are adequate.

Proper Hydration

Whenever risk factors for heat illness exist, supervisors are responsible for ensuring fresh, pure, and suitably cool potable water is located as close as practicable to where employees are working, with exceptions when employers can demonstrate infeasibility.

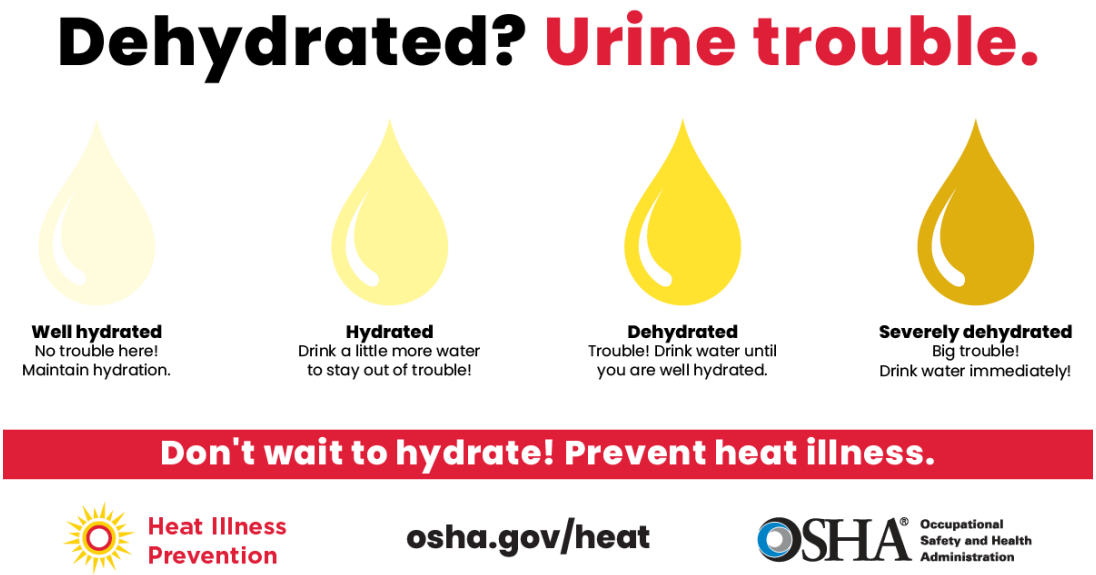
Where unlimited drinking water is not immediately available from a plumbed system, supervisors must provide enough water for every employee to be able to drink one quart of water per hour for the entire shift (at least 2 gallons per employee for an 8-hour shift). Smaller quantities of water may be provided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

Cool Water: The water should be cool, ideally around **50 to 60°F (10 to 16°C)**, which is comfortable for drinking and helps with better hydration.

Encourage Frequent Drinking: Workers should be encouraged to drink water **every 15** minutes (about 4 ounces each time) to prevent dehydration. This is especially important in high-heat environments, even if they don't feel thirsty. During periods of exceptionally high heat, workers should be encouraged to hydrate prior to reporting for work and after.

Educate workers on proper hydration and symptoms of dehydration (e.g. thirst, infrequent urination, dark urine, dry skin, tiredness, dizziness and headache. The potential risk of **overhydration**, or **water intoxication**, which can occur in extreme circumstances should also be discussed. When a person consumes excessive amounts of water too rapidly, sodium levels in the blood can be diluted and lead to a dangerous condition called **hyponatremia**.

Instruct workers to be aware of their hydration level by observing the color of their urine and hydrate accordingly.



Instruct workers to avoid caffeine, especially energy drinks and alcohol before and during working in a hot environment.

Frequency of Rest Periods and Access to Shade

The purpose of the cool-down rest period is prevention of heat illness. The supervisor is required to provide access to cool areas/shade for employees who believe they need a preventive cool-down rest period from the effects of heat and for any who exhibit indications of heat illness. The area should be as close to the workplace as possible.

Employees taking a “preventative cool-down rest” must be monitored for symptoms of heat illness, encouraged to remain in the cool area /shade and not ordered back to work until symptoms are gone.

Access to a cool area/shade must be allowed at all times, employers should follow NIOSH recommendations for rest duration. If at the end of the break the employee(s) shows signs or symptoms or heat stress they should remain in the cool area until symptoms subside.

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

HEAT STRESS
Work/Rest Schedules

Using work/rest schedules can decrease the risk of heat illness

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.

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

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.

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
• Full sun (no clouds): Add 13 °F • Partly cloudy/overcast: Add 7 °F • No shadows visible, in the shade, or at night: No adjustment		• 40% humidity: Add 3 °F • 50% humidity: Add 6 °F • 60% humidity or more: Add 9 °F

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.

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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

Procedures for Acclimatization

Acclimatization is the temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. In more common terms, the body needs time to adapt when temperatures rise suddenly, and an employee risks heat illness by not taking it easy when a heat wave or heat spike strikes, or when starting a new job that exposes the employee to heat to which the employee's body hasn't yet adjusted.

Generally, about four to fourteen days of daily heat exposure is needed for acclimatization. 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. During this acclimatization phase, proper hydration, nutrition and frequent breaks are encouraged. 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 and will be closely observed for their first two weeks on the job. Supervisors with new employees should be extra-vigilant during the acclimatization period and respond immediately to signs and symptoms of possible heat illness.

The supervisor or the designee will be extra vigilant with new employees and stay alert to the presence of heat-related symptoms.

New employees will be assigned a "buddy," or experienced coworker to monitor closely for discomfort, signs or symptoms of heat illness.

Existing employees who are away from workplace for a few days or longer may require up to 4 days to re-acclimatize themselves.

Monitoring of coworkers

During periods of potential Heat Stress, the primary responsibility for monitoring employees for heat stress will always be the Employer. However, everyone should play a role in monitoring employees for signs and symptoms of Heat Stress.

Front line supervisors will be the primary monitor for Heat Stress. During periods of elevated or extreme risk, the employer should increase the ratio of monitors to affected employees.

Employees should also be trained and expected to monitor one another a.k.a. the Buddy System. Co-workers are likely the first people who will notice signs and symptoms of Heat Stress in a co-worker.

Any person showing symptoms or signs of heat illness, either in themselves or in a co-worker, must report this to their Immediate Supervisor at once.

Effected employees should be moved immediately to a cooling area and provided with water or electrolyte replacement fluid (e.g. Gatorade, Squincher, etc.).

If condition worsens or signs and symptoms of Heat Stroke present, immediately call 911 and follow emergency procedures until help arrives.

Emergency Procedures

When workers are exposed to heat stress conditions, it is critical to ensure adequate supervision, first aid and medical services are readily available in the event a worker suffers from a heat illness. This includes ensuring adequate first aid supplies are available, and supervisors and workers are trained on what to do if a co-worker suffers from a heat-related illness.

Critical Event

In the event an employee experiences signs or symptoms of heat illness, **contact 911 immediately.** Provide clear and precise directions to the location of the ill employee

Heat stroke can be fatal if not treated immediately. Lower the victim's body temperature as quickly as possible. Move the employee to a shaded area, elevate their feet above heart level, and apply water, wet cloths, or ice packs to cool the body. Monitor the victim continuously until emergency services arrive.

If the victim is at a site location that may be difficult for responding emergency personnel to locate, administrative personnel or personnel on the scene shall go to the site entrance to provide directions for responding emergency service providers. If the victim is at a location not readily accessible, if necessary and if possible, without causing any further injury, the affected person may be relocated using an available vehicle to an accessible location.

First Aid Supplies

The following first aid supplies for heat-induced illnesses need to be on hand.

1. Reliable oral thermometer for checking body temperature.
2. Reliable instrument or timer for checking heart rate.
3. Cool water or electrolyte replacement fluids.

4. Cold packs or ice packs for treatment of heat stroke.
5. Spray bottles with water or an available water source for treating heat stroke.

First Aid Providers

Each work site should have at least one person trained to administer first aid, with two or more preferred. The location, physical address and phone number of the nearest hospital or emergency medical services must be obtained prior to the beginning of work activities under hot conditions. The following emergency response information must be obtained before beginning work activities.

1. Names, locations and phone numbers of all first aid trained supervisors or key personnel on site.
2. Phone numbers for on-site or local medical emergency services.
3. Address, phone number and directions from site to closest emergency medical services (e.g., hospital).
4. Physical address and detailed directions for emergency medical services. If the site is a remote location, then check with emergency medical services to ensure they can find the location. Some providers may require GPS coordinates.

Procedures for Employee and Supervisor Training

To be effective, training must be understood by employees. Therefore, it must be given in a language and vocabulary the employees understand. Training records will include the date of the training, who performed the training, who attended the training, and the subject(s) covered.

- Supervisors will be trained prior to being assigned to supervise other employees. Training will include this company's written procedures, and the steps supervisors will follow when employees exhibit symptoms consistent with heat illness.
- Supervisors will be trained in their responsibility to provide water, shade, cool-down rests, and access to first aid, as well as the employees' right to exercise their rights under this standard without retaliation.
- Supervisors will be trained in appropriate first aid and/or emergency responses to different types of heat illness and made aware that heat illness may progress quickly from mild signs and symptoms to a serious, life-threatening illness.
- Supervisors will be trained on how to track the weather at the job site *(e.g., by monitoring predicted temperature highs and periodically using a thermometer).* Supervisors will be instructed on how weather information will be used to modify work schedules, increase the number of water and rest breaks, or cease work early if necessary.
- All employees and supervisors will be trained before working outside. Training will include all aspects of implementing an effective Heat Illness Prevention Program,

including providing sufficient water, providing access to shade, high-heat procedures, emergency response procedures, and acclimatization procedures contained in the company's written program. Employees and supervisors will also be trained on the environmental and personal risk factors of heat illness and the importance of immediately reporting signs and symptoms of heat illness.

- In addition to initial training, employees will be retrained _____ *(e.g., annually, biannually, as needed).*
- Employees will be trained on the steps for contacting emergency medical services, including how they are to proceed when there are non-English speaking employees, how clear and precise directions to the site will be provided, and the importance of making visual contact with emergency responders at the nearest road or landmark to direct them to their worksite.
- When the temperature is expected to exceed _____ *(e.g., 80)* degrees Fahrenheit, short "tailgate" meetings will be held to review the weather report, reinforce heat illness prevention with all employees, provide reminders to drink water frequently, inform them that shade will be available, and remind them to be on the lookout for signs and symptoms of heat illness.
- New employees will be assigned a "buddy," or experienced co-worker, to ensure they understand the training and follow company procedures.