City of FRESNO

ADMINISTRATIVE ORDER NUMBER 2-31

SUBJECT: Heat Illness Prevention Plan

Responsible Department: Personnel Services
Date Issued: October 14, 2015
Date Revised:
Approved: *Signature on File*

Purpose

It is the policy of the City of Fresno to provide a safe, healthy, and secure workplace for all employees. The purpose of the Heat Illness Prevention Plan (HIPP) is to reduce the risk of heat related illness through education, training, and proper work practices.

Heat related illness is a serious condition that results when the body is unable to cool itself sufficiently through sweating. Both personal and environmental factors can contribute to heat related illnesses, which include heat stress, heat exhaustion, and ultimately, heat stroke. Heat stroke can cause serious injury or death, especially if medical treatment is delayed.

This Heat Illness Prevention Plan has been created to comply with Cal/OSHA's Heat Illness Prevention Standard, California Code of Regulations Title 8, Section 3395.

Scope

This Heat Illness Prevention Plan applies to all Departments with any outdoor or indoor worksites where it could be reasonably anticipated that environmental or personal risk factors for heat illness are present. The Cal/OSHA's Heat Illness Prevention Standard, California Code of Regulations Title 8, Section 3395, requires all employers with outdoor worksites to take precautions, which have been outlined in this document, to prevent heat illness. The primary focus of the Heat Illness Prevention Plan is to prevent heat related illness from occurring through education and proper work practices; however, the plan also identifies the signs and symptoms of heat illness, as well as the appropriate responses should heat related illness occur.

Responsibilities

1. **Personnel Services**

    a. In collaboration with Departments, distribute the HIPP to Employees.

    b. Provide training of the HIPP to Departments, Supervisors, and employees to educate on the requirements of the HIPP, including the prevention of heat illness and how to recognize and respond to symptoms.

c. Maintain employee training records.

2. Departments

a. Identify all employees who work outdoors or in other environments where potential heat illness could occur and identify the supervisor of each employee.

b. Assure that adequate water, shade and necessary rest breaks are available when the environmental risk factors for heat stress are present.

c. Ensure that all affected employees are trained on heat illness prevention.

d. Ensure that the requirements set forth in this document are followed.

3. Employees

a. Comply with the provisions of the HIPP as described in this document and in the training provided.

b. Take steps to mitigate any personal risk factors that may exist prior to working in a regulated hot environment.

c. Immediately report unsafe conditions to their supervisor.

d. Report heat-related illness signs and symptoms in themselves or others immediately to their supervisor.

Definitions

Acclimatization – temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four (4) to fourteen (14) days of regular work for at least two (2) hours per day in the heat.

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

Environmental Risk Factors for Heat Illness – working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.

Landscaping – providing landscape care and maintenance services and/or installing trees, shrubs, plants, lawns, or gardens or providing these services in conjunction with

the design of landscape plans and/or the construction (i.e., installation) of walkways, retaining walls, decks, fences, ponds, and similar structures, except for employment by an employer who operates a fixed establishment where the work is to be performed and where drinking water is plumbed.

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

Personal Risk Factors for Heat Illness – factors such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.

Shade – blockage of direct sunlight. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning. Shade may be provided by any natural or artificial means that does not expose employees to unsafe or unhealthy conditions and that does not deter or discourage access or use.

Temperature – the dry bulb temperature in degrees Fahrenheit obtainable by using a thermometer to measure the outdoor temperature in an area where there is no shade. While the temperature measurement must be taken in an area with full sunlight, the bulb or sensor of the thermometer should be shielded while taking the measurement, e.g., with the hand or some other object, from direct contact by sunlight.

Prevention Procedures

1. **Provision of Water**

   Supervisors shall ensure that employees shall have access to potable drinking water at all times. Drinking water shall be fresh, pure, suitably cool, and provided to employees free of charge. The water shall be located as close as practicable to the areas where employees are working. Where drinking water is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for drinking for the entire shift. The shift may begin with smaller quantities of water if there are effective procedures for replenishment during the shift as needed to allow employees to drink one quart or more per hour. The frequent drinking of water shall be encouraged.

2. **Access to Shade**

   a. Shade shall be present when the temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work area exceeds 80 degrees Fahrenheit, one or more areas with shade shall be available at all times while employees are present that are either open to the air or provided with ventilation or cooling.

      i. The amount of shade present shall be at least enough to accommodate the number of employees on recovery or rest periods, so they can sit in a normal posture fully in the shade without having to be in physical contact with each other.

      ii. The shade shall be located as close as practicable to the areas where employees are working.

   b. Shade shall be available when the temperature does not exceed 80 degrees Fahrenheit and provided per the provisions above upon an employee's request.

   c. Employees shall be allowed and encouraged to take a preventative cool-down rest in the shade when they feel the need to do so to protect themselves from overheating. Such access to shade is permitted at all times.

      An individual who takes a preventative cool-down rest shall:

      i. Be monitored and asked if he or she is experiencing symptoms of heat illness;

      ii. Be encouraged to remain in the shade; and

      iii. Not be ordered back to work until any signs or symptoms of heat illness have abated, but in no event less than five (5) minutes in addition to the time needed to access shade.

   d. 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, appropriate first aid or Emergency Response Procedures shall be provided.

   e. If it is infeasible or unsafe to have a shade structure, or otherwise to have shade present on a continuous basis, alternative procedures for providing access to shade may be utilized, if alternative procedures provide equivalent protection. Contact Risk Management if alternative procedures for providing access to shade is required.

3. **Acclimatization**

    a. All employees shall be closely observed by a supervisor or designee during a heat wave. For purposes of this section only, “heat wave” means any day in which the predicted high temperature for the day will be at least 80 degrees Fahrenheit and at least ten (10) degrees Fahrenheit higher than the average high daily temperature in the preceding five (5) days.

    b. An employee who has been newly assigned to a high heat area shall be closely observed by a supervisor/designee for the first 14 days of the employee’s employment.

High-Heat Procedures

Additional high-heat procedures are required when the temperature equals or exceeds 95 degrees Fahrenheit. These procedures shall include the following to the extent practical:

1. Ensure that effective communication by voice, observation, or electronic means is maintained so that employees at the work site can contact a supervisor when necessary. An electronic device, such as a cell phone or text messaging device, may be used for this purpose only if reception in the area is reliable.

2. Observe employees for alertness and signs or symptoms of heat illness. Ensure effective employee observation/monitoring by implementing one or more of the following:

    a. Supervisor/designee observation of 20 or fewer employees;

    b. Mandatory buddy system;

    c. Regular communication with sole employee such as by radio or cellular phone; or

    d. Other effective means of observation.

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 employee is available.

4. Remind employees throughout the work shift to drink plenty of water.

5. Pre-shift meetings before the commencement of work to review the high-heat procedures, encourage employees to drink plenty of water, and remind employees of their right to take a cool-down rest when necessary.

Emergency Response Procedures, Identifying Heat Illness, and First Aid

1. **Emergency Response Procedures**

    a. Ensure that effective communication by voice, observation, or electronic means is maintained so that employees at the work site can contact a supervisor or emergency medical services when necessary. An electronic device, such as a cell phone or text messaging device, may be used for this purpose only if reception in the area is reliable. If an electronic device will not furnish reliable communication in the work area, a means of summoning emergency medical services must be identified.

    b. Respond to signs and symptoms of possible heat illness including, but not limited to, first aid measures and the emergency medical services that will be provided if necessary.

        i. If a supervisor observes, or any employee reports, any signs or symptoms of heat illness in any employee, the supervisor shall take immediate action to commensurate with the severity of the illness.

        ii. If the signs or symptoms are indicators of severe heat illness (such as, but not limited to, decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior, or convulsions), Emergency Response Procedures must be implemented.

        iii. An employee exhibiting signs or symptoms of heat illness shall be monitored and shall not be left alone or sent home without being offered onsite first aid and/or being provided with emergency medical services.

    c. Contact emergency medical services, and if necessary, transport employees to a place where they can be treated by an emergency medical provider.

        i. Ensure that, in the event of an emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders.

2. **Identifying Heat Illness and First Aid**

    Heat Illness is a medical condition that can result from the body's inability to cope with a particular heat load. The National Institute of Occupational Safety and Health (NIOSH) identifies types of heat illness, symptoms, and first aid measures as follows:

Illness	Symptoms	First Aid*
Heat Stroke	• Hot dry, skin or profuse sweating • Hallucinations • Chills • Throbbing headache • High body temperature • Confusion/dizziness • Slurred speach	• **Call 911** • Move employee to a cool, shaded, or air-conditioned area • Cool the employee: o Soak clothes with water o Spray, sponge, or shower with water o Fan body with cool air
Heat Exhaustion	• Heavy sweating • Extreme weakness or fatigue • Dizziness, confusion • Nausea • Clammy, moist skin • Pale or flushed complexion • Muscle cramps • Slightly elevated body temperature • Fast and shallow breathing	• Have employee rest in a cool, shaded, or air-conditioned area • Have the employee drink plenty of water or other cool, non-alcoholic beverage • Have the employee cool themselves in a cool shower, bath, or sponge bath
Heat Syncope	• Light-headedness • Dizziness • Fainting	• Sit or lie down in a cool place when they begin to feel symptoms • Slowly drink water, clear juice, or a sports beverage
Heat Cramps	• Muscle pain or spasms usually in the abdomen, arms or legs	• Stop all activity, and sit in a cool place • Drink clear juice or a sports beverage • Do not return to strenuous work for a few hours after the cramps subside because further exertion may lead to heat exhaustion or stroke • Seek medical attention if any of the following apply: o Employee has heart problems o Employee is on a low-sodium diet o Cramps do not subside within one hour
Heat Rash	• Red cluster of pimple-like bumps or small blisters • More likely to occur on neck and upper chest, in groin, under breasts, and in elbow creases	• Keep affected area dry • Dusting powder may be used to increase comfort

Figure 1 - Types of Heat Illness, Symptoms, and First Aid

***Information should be used as a guide only and is not intended to take the place of treatment from a medical professional.**

Recognizing Heat Illness Risk Factors

1. **Environmental Risk Factors**

   Environmental risk factors for heat illness include 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, and protective clothing and personal protective equipment worn by employees.

2. **Personal Risk Factors**

   Personal risk factors for heat illness include age, degree of acclimatization, general health, water consumption, and use of medications, caffeine, or alcohol, which can affect the body's water retention or other physical response to heat.

3. **Work Conditions**

   Supervisors must evaluate work conditions before sending employees to perform outdoor work in hot conditions. Typically, temperatures above 80 degrees Fahrenheit, especially with heavy physical work activities, would represent conditions where there is a risk of heat illness. Other factors, such as high humidity or work activities that restrict the body's ability to cool itself, such as protective clothing, could result in a risk of heat illness at lower temperatures.

4. **Heat Index**

   The U.S. National Oceanographic and Atmospheric Administration's (NOAA) National Weather Service developed a heat index system that combines both air temperature and relative humidity into a single value that indicates the apparent temperature in degrees Fahrenheit, or how hot the weather will feel when relative humidity is factored in with the actual air temperature. The higher the heat index, the hotter the weather will feel, and the greater the risk that employees who work outdoors will experience heat-related illness as the heat index rises.

   The Heat Index Chart below will identify the Heat Index temperature. As an example, if the air temperature is 96 degrees Fahrenheit and the relative humidity is 65%, the heat index (how hot it feels) is 121 degrees Fahrenheit.

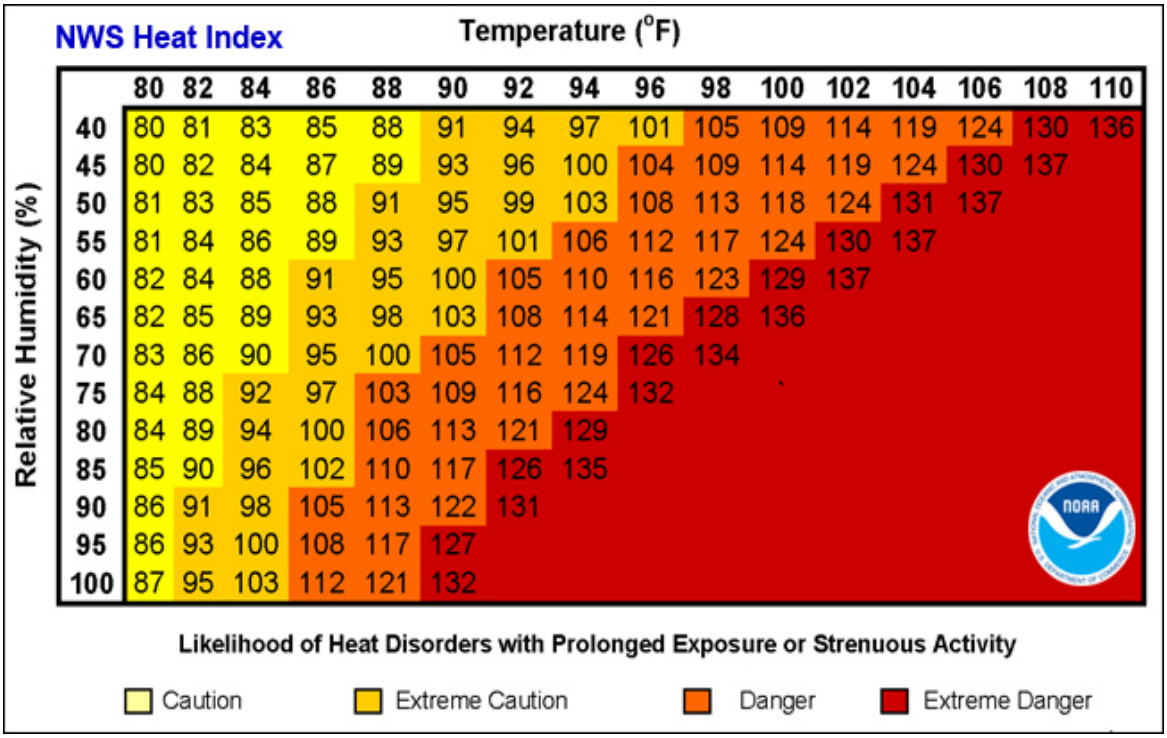

Figure 2 - National Weather Service Heat Index Chart

Important Consideration: NOAA devised the heat index values for shaded conditions and light winds. Full sunshine can increase heat index values up by to 15 degrees Fahrenheit. Strenuous work and the use of heavy or specialized protective clothing also have an additive effect. As a result, the risk at a specific heat index could be higher than that listed in the table above if the work is indirect sunlight without a light breeze, or if work involves strenuous takes or the use of heavy or specialized protective clothing. Extra measures, including implementing precautions at the next risk level, are necessary under these circumstances.

The heat index can be used to determine the risk of heat-related illness for employees who work outdoors, what actions are needed to protect employees, and when those actions are triggered. Depending on the heat index value, the risk for heat-related illness can range from lower to very extreme. As the heat index value goes up, more preventative measures are needed to protect employees.

Training

Departments shall provide documented, Heat Illness Prevention Training meeting the requirements below to all employees, and supervisors of employees, who perform

outdoor or indoor work where heat related illness could reasonably be anticipated to occur.

1. **Employee Training**

   All employees, supervisory and non-supervisory, shall receive training on the following:

   a. The environmental and personal risk factors for heat illness, as well as the added burden of heat load on the body caused by exertion, clothing, and personal protective equipment.

   b. Procedures for complying with the requirements of Cal/OSHA's Heat Illness Prevention Standard, California Code of Regulations Title 8, Section 3395.

   c. The importance of frequent consumption of water.

   d. The importance of acclimatization.

   e. Types of heat illness, common signs and symptoms of heat illness, and appropriate first aid and emergency responses to different types of heat illness.

   f. Importance of immediately reporting signs and symptoms of possible heat illness in themselves or co-workers.

   g. Procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided.

   h. Procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider.

   i. 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, including designating a person to be available to ensure that emergency procedures are invoked when appropriate.

2. **Supervisor Training**

   Prior to supervising employees performing work that should reasonably be anticipated to result in exposure to the risk of heat illness, effective training on the following topics shall be provided to the supervisor:

   a. The training received by all employees as indicated in Section A above.

b. The procedures the supervisor is to follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.

c. How to monitor weather reports and how to respond to hot weather advisories.

3. **Additional Resources**

Additional information about Heat Illness can be found at the following resources:

Cal/OSHA's Heat Illness Prevention Standard, California Code of Regulations Title 8, Section 3395

OSHA's Campaign to Prevent Heat Illness in Outdoor Workers

Department of Industrial Relations – Heat Illness Prevention

The National Institute of Occupational Safety and Health (NIOSH)

The U.S. National Oceanographic and Atmospheric Administration's (NOAA) National Weather Service