## CITY OF SACRAMENTO REGULATORY COMPLIANCE PROGRAM TOPIC: HEAT ILLNESS PREVENTION PROGRAM EFFECTIVE DATE: 4/18 SUPERSEDES: 03/11 and 04/08 SECTION: RCP #9

# PURPOSE

This document establishes the City of Sacramento's Heat Illness Prevention Program to control the risk of the occurrence of heat illness in accordance with California Code of Regulations (CCR) Title 8 Section 3395. The Heat Illness Prevention Program applies to all City employees when working outdoors.

# RESPONSIBILITIES

Each department, with workers covered by this program, is responsible for implementing the following requirements:

### a. Risk Factor Assessment

- Environmental risk factors for heat illnesses may be present any time of year and are highly likely to be present from the beginning of April through the end of October. Actual weather conditions (e.g. heat index, weather forecast, etc.) should be taken into consideration to determine the actual risk of heat illness for each work day;
- 2. Working conditions, the type of work, workload intensity and duration, and the use of personal protective equipment (PPE) are additional factors that must be considered when departments assess the risk for heat illness;
- 3. Personal risk factors and the degree of acclimatization should also be considered when determining the tasks for employees each day.

# b. Drinking Water

- 1. Departments must provide sufficient quantities of drinking water and sanitary drinking containers in all work environments. Supervisors must encourage employees to drink water frequently;
- 2. A minimum of one quart of drinking water per hour must be available to each employee or two gallons per employee for an eight-hour shift to replace water lost by perspiration. A lesser quantity of water may be provided at the beginning of the shift provided there are effective replenishment procedures in place to supply one quart per hour per employee;
- 3. Water must be potable, fresh, pure, and suitably cool.

## c. Access to Rest in Shade

- 1. Shade (blockage of direct sunlight) must be provided by temporary structures if adequate shade cannot be provided by buildings or trees. Shaded areas must be open to the air or provided with ventilation or cooling and located as close as practicable to areas where employees are working;
- 2. Employees shall be allowed and encouraged to take a cool-down rest in the shade for a period of no less than five minutes if they feel the need for protection from overheating. Such access to shade shall be permitted at all times. Employees shall be monitored for symptoms of heat illness and shall not be ordered back to work until symptoms have abated and at least five minutes have passed;
- 3. When the temperature exceeds 80 degrees Fahrenheit, shade is required to be present and sufficient to accommodate all employees taking a rest, cool-down or meal break at one time, in a normal, seated posture without physical contact with each other;
- 4. When the temperature does not exceed 80 degrees Fahrenheit, timely access to shade must be provided upon an employee's request.

# d. Acclimatization

- 1. A supervisor or designee shall closely observe all employees during heat wave conditions;
- 2. A supervisor or designee shall closely observe employees newly assigned to high heat work areas for the first 14 days.

# e. High-heat Procedures

High heat requirements must be implemented when the temperature equals or exceeds 95 degrees Fahrenheit. High heat procedures apply only to City operations that encompass agriculture, construction, landscaping, or transportation of heavy materials in vehicles not equipped with air-conditioning. Supervisors are required to conduct preshift meetings to review high heat procedures which include:

- 1. Ensuring that effective communication is maintained by voice, observation or electronic means to contact a supervisor;
- 2. Observing employees for alertness and signs or symptoms of heat illness and designating employees authorized to call for emergency medical services;
- 3. Limiting supervisor or designee observation to 20 or fewer employees, implementing a mandatory buddy system or maintaining regular communication with sole employee via cell phone or radio; and
- 4. Reminding employees throughout the work shift to drink plenty of water and of his or her right to take cool down rest periods when necessary.

# f. Providing Training

Effective training must be provided to all employees and his or her supervisor before beginning work that it may reasonably result in exposure to the risk of heat illness. Training must include the following information:

- 1. 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;
- 2. The department's/division's procedures for complying with heat illness regulations including the employer's responsibility to provide water, shade, cool-down rests and access to first aid as well as the employee's right to exercise his or her rights without fear of retaliation;
- 3. The importance of frequent consumption of small quantities of water up to four cups of water per hour to prevent heat illness in hot work environments;
- 4. The concept, importance and methods of acclimatization or adapting gradually to the heat;
- 5. The different types of heat illness as well as the common signs and symptoms;
- 6. The importance of employees immediately reporting to the department/division, directly or through the supervisor, symptoms or signs of heat illness in themselves, or in co-workers;
- 7. The department's/division's procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary;
- 8. Procedures for contacting emergency medical services (911 from a land line or 916-732-0100 from a cellular telephone), and, if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider; and
- 9. How to provide clear and precise directions to the worksite.

Supervisors must also be trained in procedures to implement this Heat Illness Prevention Program, procedures to follow when an employee reports or exhibits the signs of heat illness and how to monitor weather reports and respond to hot weather advisories.

## **EMERGENCY RESPONSE PROCEDURES**

Call 911 if unsure of an employee's symptoms. Decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior or convulsions require immediate emergency medical response. If an employee shows signs of serious heat illness at the end of the work shift, supervisors must ensure the employee receives medical attention before going home.

Immediately report to the Environmental Health & Safety Office (EH&S) at 808-5278 and to the Workers' Compensation Office at 808-5741 if an employee must be hospitalized. After hours, please have the City Operator (311 or 916-264-5011) contact EH&S.

# Definitions (Attachment A)

## 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 to fourteen days of regular work for at least two hours per day in the heat.

# **Environmental Risk Factors for Heat Illness**

Working conditions that create the possibility 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.

# **Heat Cramps**

Painful, involuntary muscle spasms that usually occur during heavy exercise or strenuous activity in hot environments. Inadequate fluid intake often contributes to heat cramps. Spasms may be more intense and more prolonged than typical nighttime leg cramps. Muscles most often affected include calf, arm, abdomen, and back, although heat cramps may involve any muscle group involved in the activity.

# **Heat Exhaustion**

A form of heat illness which can develop after several days of exposure to high temperatures and/or inadequate or unbalanced replacement of fluids. Those most prone to heat exhaustion are the elderly, those with high blood pressure, and those working or exercising in a hot environment. Untreated, heat-exhaustion may lead to heat stroke. Symptoms include cool, moist, pale, flushed or red skin; heavy sweating; headache; nausea or vomiting; dizziness; giddiness; and extreme weakness or fatigue. The skin is clammy and moist while the body temperature can be near normal or slightly elevated, not exceeding 104 degrees Fahrenheit.

# **Heat Illness**

A serious medical condition resulting from the body's inability to cope with a particular heat load. Heat illness includes, in increasing severity, heat cramps, heat exhaustion, heat syncope, and heat stroke.

# Heat Index

An index that combines air temperature and relative humidity to determine an apparent temperature, or how hot it feels. High humidity reduces the body's ability to get rid of excess heat via perspiration, so for a given air temperature, the higher the humidity, the higher the apparent temperature or heat index.

# **Heat Stroke**

A serious heat illness requiring immediate first aid and medical attention (911). Heat stroke occurs when the body is unable to lower its temperature because the biological cooling mechanism has shut down. Symptoms include sweating has stopped, confusion, irrational behavior, loss of consciousness, convulsions (usually), not dry skin, and body temperature may reach 105 degrees Fahrenheit or higher which may lead to death.

# Heat Syncope

Sudden fainting or loss of consciousness related to heat caused by low blood pressure. Heat causes blood vessels in the skin and in the lower part of the body to dilate, which may cause the blood to pool in the lower extremities rather than return to the heart to be pumped to the brain, which may then result in fainting.

### Heat Wave

Any day in which the predicted high temperature will be at least 80 degrees Fahrenheit and at least ten degrees Fahrenheit higher than the average high daily temperature in the preceding five days.

### **High-heat Procedures**

Procedures implemented when the temperature equals or exceeds 95 degrees Fahrenheit. The procedures apply only to City operations that encompass agriculture, construction, landscaping, or transportation of heavy materials in vehicles not equipped with air-conditioning. The procedures require effective communication with supervisors, observation of employees, reminding employees to drink plenty of water, and close supervision of new employees for the first fourteen days.

## 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 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 drinking water is plumbed.

### **Personal Risk Factors**

Factors such as an individual's age, degree of acclimatization, overall health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications which affect the body's water retention or other physiological responses to the heat.

## **Preventative Recovery Period**

A period used to recover from the heat to prevent heat illness. This could be in addition to or the same as a normal rest break.

### Shade

The 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. 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 obtained 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, using a hand or other object, from direct contact by sunlight.

# Causes, Signs and Symptoms of Heat Illness (Attachment B)

The following is a summary of the causes, signs and symptoms as well as treatment of the types of common heat illnesses.

- a. <u>Heat cramps</u> are caused by strenuous activity in the heat. People who perspire more than average during strenuous activity are more prone to heat cramps. The perspiration depletes the body's salt and moisture. The low salt level in the muscles causes painful cramps. Heat cramps may also be a symptom of heat exhaustion. If you suspect heat cramps:
  - I. Have the employee stop all activity and sit quietly in a cool place.
  - 2. Have the employee rest briefly and cool down.
  - 3. Make sure the employee drinks cool water (not iced), clear juice, or a sports beverage containing electrolytes.
  - 4. Practice gentle, range-of-motion stretching and gentle massage of the employee's affected muscle group.
  - 5. Be aware that returning to strenuous activity after the cramps subside may lead to heat exhaustion or heat stroke.
  - 6. If symptoms do not go away in one hour, seek medical attention.
- b. <u>Heat exhaustion</u> is caused by excessive heat and dehydration. The warning signs of heat exhaustion include: heavy perspiring; paleness; muscle cramps; tiredness; weakness; dizziness; headache; nausea or vomiting and fainting. Symptoms of heat exhaustion may be cool and moist skin, pulse rate will be fast and weak, and breathing will be fast and shallow. If heat exhaustion is untreated, it may progress to heat stroke. If you suspect heat exhaustion:
  - I. Get the employee out of the sun and into a shady or air-conditioned location.
  - 2. Lay the employee down and elevate the legs and feet slightly.
  - 3. Loosen or remove the employee's clothing.
  - 4. Have the person drink cool water (not iced), clear juice or a sports beverage containing electrolytes.
  - 5. Cool the employee by spraying or sponging him or her with cool water and fanning.
  - 6. Ice packs may be applied under the arms and in the groin area.
  - 7. Seek medical attention.
- c. <u>Heat syncope</u> (or fainting) is caused by strenuous activity in hot environments and dehydration. Heat syncope can be caused by blood pooling in the legs if a person has been standing still for a long time in a hot environment. It can also be caused by vigorous physical activity for two or more hours before the fainting happens. The risk of developing heat syncope increases when a person has not acclimated to a hot environment. The warning signs for heat syncope include: pale, cool, and moist skin, feeling faint or lightheaded, lightheadedness when a person changes position, such as moving from a lying position to a standing position and being dehydrated. If you suspect heat syncope:
  - I. Get the employee out of the sun and into a shady or air-conditioned location.
  - 2. Lay the employee down and elevate the legs and feet slightly.
  - 3. Have the employee drink cool water (not iced), clear juice, or a sports beverage containing electrolytes.

- 4. Cool the employee by spraying or sponging employee with cool water and fanning.
- 5. Ice packs may be applied under the arms and in the groin area.
- 6. If symptoms do not go away in one hour, seek medical attention.
- d. <u>Heat stroke</u> is caused when the body's mechanism for dealing with heat stress, such as perspiring and temperature control, are lost. The main sign of heat stroke is elevated body temperature, generally greater than 104 °F. The warning signs of heat stroke include: red, hot, and dry skin, rapid heartbeat, rapid and shallow breathing, elevated or lowered blood pressure, cessation of sweating, irritability, confusion, or unconsciousness, and fainting. If you suspect heat stroke:
  - I. Move the employee out of the sun and into a shady or air-conditioned space.
  - 2. Dial 911 from a landline or call 916-732-0100 from a cellular telephone for emergency medical assistance.
  - 3. Cool the employee by covering him or her with damp sheets or by spraying with cool water and fanning.
  - 4. Ice packs may be applied under the arms and in the groin area.

If an employee experiences loss of consciousness for any reason or becomes hospitalized, immediately report this to the Environmental, Health & Safety Office (EH&S) at 808-5278 and to the Workers' Compensation Office at 808-5741. After hours, please have the City Operator (311 or 264-5011) contact EH&S.