COUNTY OF RIVERSIDE
STANDARD SAFETY OPERATIONS MANUAL

DOCUMENT NUMBER: 2014		**DATE ISSUED:**	06/01/09
SUBJECT:	Heat Illness Prevention Policy	**EFFECTIVE DATE:**	06/01/09

PURPOSE: To ensure that all County of Riverside employees that spend a significant amount of time outdoors working on job tasks are protected from heat illness and to establish the minimum requirements for compliance with California Code of Regulations (CCR), Title 8, Section 3395.

POLICY: It is the policy of the County of Riverside that any employee that spends a significant amount of time participating in job tasks in outdoor places of employment will comply with the procedures in this document and in their department's Injury and Illness Prevention Program.

OBJECTIVE: To protect employees while also complying with applicable state law.

SCOPE: Applies to all outdoor places of employment.

REFERENCE: California Code of Regulations, Title 8, Article 10, Section 3395.

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I OVERVIEW & OBJECTIVES

Heat illness has always been a work hazard in California in general and Riverside County in particular. It can, of course, be fatal and, even when it isn't, can lead to permanent physical damage. Fortunately, heat related illness is preventable.

On August 12, 2005, the California Occupational Safety and Health Standards Board voted to adopt an emergency standard on heat illness prevention. **This regulation applies to all outdoor places of employment and <u>requires</u> all of the following:**

a. At all times, drinking water must be available to employees who work outdoors (one quart per hour)

b. Employees must have access to a shaded area to prevent or recover from heat illness symptoms.

c. The employer must have written procedures in place that outline: the employer's procedures for complying with the requirements of this standard; The employer's procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary; The employer's 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; The employer's procedures for ensuring 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.

d. In addition to being trained on the requirements referenced above in sections a. b. & c., all employees who work outdoors and all supervisors who supervise these employees must be trained on the risks factors and prevention of heat illness, including (although not limited to) environmental and personal risk factors that contribute to heat illness and how to recognize symptoms and respond when symptoms appear.

The primary goal of the County of Riverside's Heat Illness Prevention Policy is employee safety. This policy will provide employees, managers and supervisors with guidance on: how to anticipate environmental conditions that contribute to heat related illness; how to recognize when work assignments place employees at risk and; what job instructions need to be communicated to employees regarding the prevention of heat related illness.

As you read through this document you will notice that it refers to the *"County's"* program, procedures etc…Since individual departments may have unique situations, each department should have a program tailored to their needs. Accordingly, the use of the term County throughout this document (i.e. "The County's procedures for contacting emergency medical services…") should be considered to be interchangeable with the term "department/division/program" when it comes to developing department specific programs.

II DEFINITIONS

Acclimatization: The 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 about two hours per day in the heat.

Environmental risk factors of heat illness: The 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.

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

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.

Preventive recovery period: A period of time to recover from the heat in order to prevent heat illness.

Shade: The blockage of direct sunlight. This may be accomplished by natural or manmade means. Trees/foliage or canopies, umbrellas, and other temporary structures or devices may be used to provide shade. 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.

III RESPONSIBILITIES – HR SAFETY DIVISION

a. Prepare and maintain a written program which provides guidance on complying with the requirements of California Code of Regulations, Title 8, Article 10, Section 3395.
b. Assist departments with preparing and implementing their written Heat Illness Prevention program.
c. Assist with providing training to all potentially impacted employees and their supervisors on the risks and prevention of heat illness, including how to recognize symptoms and respond when they appear.

RESPONSIBILITIES – MANAGERS AND SUPERVISORS

a. Identify all employees who are required to work outdoors for a significant amount of time.
b. Ensure that initial and periodic training is provided to employees under their supervision and that the training is consistent with the requirements of this document
c. Ensure that active or passive cooling equipment is available to employees who may require its use.
d. Maintain employee training records for training conducted by Supervisors

RESPONSIBILITIES – EMPLOYEES

a. Comply with the requirements of this program
b. Understand the responsibilities of both the County and employees in maintaining compliance with this program.
c. Take steps to mitigate any personal risk factors that may exist prior to working in a regulated hot environment
d. Immediately report unsafe conditions to their supervisor
e. Observe their fellow employees for signs of heat related illness and take quick action to ensure that rapid assistance is provided.

IV REQUIRED ELEMENTS OF PROGRAM

NOTE: The requirements outlined in this policy **reflect mandatory employer requirements found in state statutory and regulatory law.** Accordingly, **the terms *"must"* and *"shall"* are used when addressing required elements of the program.** The term ***"should"*** is used when conveying a **recommended** practice. Please note that many of the recommended practices are reflective of Cal/OSHA recommendations and, absent a compelling reason, should be followed whenever possible.

A) SCOPE

This standard applies to all outdoor places of employment. The standard contains no specific limitations as to when it applies, and Cal/OSHA interprets the standard's provisions to apply at all times when employees are at work outdoors. However; Cal/OSHA has referenced a need that a "significant" amount of time be spent working in the outdoor environment.

B) ACCLIMATIZATION

Managers and supervisors **shall** ensure that they track and are aware of the most current and accurate meteorological information (ambient temperature and relative humidity) in the areas where they will be assigning employees to work.

If, due to a sudden heat wave, employees are working in temperatures to which they haven't been exposed for several weeks or longer, or new employees have recently been hired, the Supervisor should be extra-vigilant to try to find ways to lessen the intensity of the employee's work during a two-week "break-in" period, and immediately recognize symptoms of possible heat illness.

When possible, working hours should be modified to allow for work during the cooler hours of the day. When a modified or shorter work-shift is not possible, more water and rest breaks should be provided

C) PROVISION OF WATER

Water is a key preventive measure to minimize the risk of heat related illnesses. Employees **shall**, at all times, have ready access to potable drinking water and be encouraged to frequently consume small amounts of water throughout the day – up to 4 cups per hour, depending upon heat conditions. If plumbed, fresh, pure water is not readily accessible, potable water containers or bottled water **must** be provided. The water **must** always be cool.

If water containers are used, it is not permissible to wait until the container is empty to replenish it, nor is it permissible to replenish the drinking-water supply only when requested by employees.

When the temperature exceeds 90 degrees F., ice should be available to cool the water.

D) PROVISION OF SHADE

Employees suffering from heat related illnesses or in need of a recovery period from the heat **must** be provided with access to an area with shade that is either open to the air or provided with ventilation or cooling for a period of no less than five minutes. Access to shade **must** be permitted at all times. Other methods of cooling, other than shade, can be used if it can be demonstrated that these methods are at least as effective as shade.

The nearest shaded area **must** be as close as practicable. Usually this will mean that shade must be reachable within a 2 ½ minute walk.

NOTE: Cal/OSHA has provided the following guidance on the question of distance when it comes to the placement of shade:

"Cal/OSHA recognizes that, just as in some cases it is practicable to place shade closer than that (e.g. a 2 ½ minute walk), the same considerations of practicality will necessitate shade being placed farther away than that in other cases. **Cal/OSHA believes that in no**

case is it permissible for shade to be located more than ¼ mile or a five minute walk away, whichever is shorter".

NOTE: Cal/OSHA has provided the following guidance on when shade **must** be erected (regardless of whether or not it has to be put up, it must always be on site and "trigger" temperatures do not apply if the employee is wearing special work-related clothing which increases the risk of heat illness):

"If the National Weather Service (NWS) prediction on the previous day at 5 PM is for the temperature high for the area to exceed 85 degrees F, shade **must** be up at the *beginning* of the shift and remain present throughout.

Regardless of what the predicted high has been the previous day, employers are expected to know if the actual temperature is exceeding 90 degrees F at their worksite. If the temperature enters this range, shade **must** actually be present *regardless of the previous day's predicted temperature high.*

Alternatively (e.g. instead of using the NWS forecast), the Supervisor may choose to monitor the temperature hourly during the work shift to determine whether the temperature exceeds 85 degrees F at the worksite. Shade **must** be promptly provided once the temperature reaches 85 degrees F and **shall** remain up for the remainder of the shift."

Shade **must** always be promptly provided if it is requested by the employee.

The shaded area **must** let employees assume a comfortable posture and **must** not cause exposure to another hazard.

Areas shaded by artificial or mechanical means, such as a pop-up canopy as opposed to a tree, **must** allow for employees to avoid contact with bare soil. This can be done by providing chairs, benches, sheets, towels or other items that let employees sit and rest without contacting dirt. When the shaded area is a lawn, no such items need be provided, regardless of the means by which the area is shaded.

During the shift, there **must** always be enough shade to accommodate those employees who seek it to cool off as required by the standard. Supervisors should anticipate that the hotter the weather gets, the more employees are likely to seek shade at the same time. The Supervisor should develop a procedure for the rotation of employees in and out of shaded areas to ensure all have sufficient access for the five-minute interval specified in the standard.

NOTE: As a general rule, and subject to the considerations described above, Cal/OSHA has indicated that it considers the amount of shade to be sufficient if there is enough to accommodate, at the same time, 25 percent of the employees on a shift, so that employees can sit comfortably in the shade without touching each other.

E) MONITORING OF EMPLOYEES' CONDITION

Supervisors should continuously check all employees, staying alert to the presence of heat related illness symptoms.

Until acclimated, co-workers should use a "buddy system" to watch each other closely for discomfort or symptoms of heat illness.

Signs and symptoms of heat stress **must** never be discounted and employees are encouraged to report these symptoms immediately.

Supervisors **must** carry cell phones or other means of communication, to ensure that emergency services can be called. The forms of communication **must** be checked to ensure that they are functional prior to each shift.

Supervisors **must** account for the whereabouts of their employees at appropriate intervals throughout the work shift and at the end of the work shift.

F) EMERGENCY PROTOCOLS

If signs/symptoms of heat illness have been identified, an employee **shall** immediately contact the Supervisor to report symptoms. The Supervisor **shall** immediately call 9-1-1.

While awaiting EMS response:

- Get the victim to a cool environment
- Loosen or remove excess clothing
- Provide cool drinking water if person is conscious and not nauseous
- Fan and mist the person with water

IMPORTANT: Anyone with symptoms of heat illness **must** never be sent home or left unattended without medical evaluation.

G) TRAINING

Training is critical to help reduce the risk of heat related illnesses and to assist with obtaining emergency assistance without delay.

Affected Employees

All employees covered by the Heat Illness Prevention program **must** receive heat illness prevention training prior to working outdoors. Training in the following topics **shall** be provided to all supervisory and non-supervisory employees:

a. The environmental and personal risk factors for heat illness;
b. The County's procedures for complying with the requirements of this program;
c. The importance of frequent consumption of small quantities of water, up to 4 cups per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties;
d. The importance of acclimatization;

e. The different types of heat illness and the common signs and symptoms of heat illness;
f. The importance to employees of immediately reporting to the employer, directly or through the employee's supervisor, symptoms or signs of heat illness in themselves or in co-workers;
g. The County's procedure for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary;
h. The County's 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. The County's procedures for ensuring 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

On hot days, and during a heat wave, supervisors should hold short tailgate meetings to review this above information with all workers.

NOTE: Title 8, CCR 3203 requires that communication for employees shall be in a form readily understandable by all affected employees

Supervisors of Affected Employees

In *addition* to the training given to the affected employees, the supervisor must be trained on the following prior to being assigned to supervise outdoor workers:

a. The procedures the supervisor is to follow to implement the applicable provisions of this program;
b. The procedures the supervisor is to follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures

H) WRITTEN REQUIREMENTS

The following procedures must be in writing and made available to employees and Cal/OSHA upon request:

- The County's procedures for complying with this program
- The County's procedure for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary;
- The County's 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;
- The County's procedures for ensuring 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

APPENDIX A

CCR, Title 8, Article 10, Section 3395 – Heat Illness Prevention Standard

§3395. Heat Illness Prevention

(a) Scope and Application. This section applies to the control of risk of occurrence of heat illness. This is not intended to exclude the application of other sections of Title 8, including, but not necessarily limited to, sections 1230(a), 1512, 1524, 3203, 3363, 3400, 3439, 3457, 6251, 6512, 6969, 6975, 8420 and 8602(e). This section applies to all outdoor places of employment.

Note No. 1: The measures required here may be integrated into the employer's Injury and Illness Program required by section 3203.

Note No. 2: This standard is enforceable by the Division of Occupational Safety and Health pursuant to Labor Code sections 6308 and 6317 and any other statutes conferring enforcement powers upon the Division. It is a violation of Labor Code sections 6310, 6311, and 6312 to discharge or discriminate in any other manner against employees for exercising their rights under this or any other provision offering occupational safety and health protection to employees.

(b) Definitions.

"Acclimatization" means 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.

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

"Environmental risk factors for heat illness" means 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.

"Personal risk factors for heat illness" means 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.

"Preventative recovery period" means a period of time to recover from the heat in order to prevent heat illness.

"Shade" means blockage of direct sunlight. Canopies, umbrellas and other temporary structures or devices may be used to provide shade. 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.

(c) Provision of water. Employees shall have access to potable drinking water meeting the requirements of Sections 1524, 3363, and 3457, as applicable. Where it 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. Employers may begin the shift with smaller quantities of water if they have 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, as described in (e), shall be encouraged.

(d) Access to shade. Employees suffering from heat illness or believing a preventative recovery period is needed shall be provided access to an area with shade that is either open to the air or provided with ventilation or cooling for a period of no less than five minutes. Such access to shade shall be permitted at all times. Except for employers in the agricultural industry, cooling measures other than shade (e.g., use of misting machines) may be provided in lieu of shade if the employer can demonstrate that these measures are at least as effective as shade in allowing employees to cool.

(e) Training.

(1) Employee training. Training in the following topics shall be provided to all supervisory and non-supervisory employees.

(A) The environmental and personal risk factors for heat illness;

(B) The employer's procedures for complying with the requirements of this standard;

(C) The importance of frequent consumption of small quantities of water, up to 4 cups per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties;

(D) The importance of acclimatization;

(E) The different types of heat illness and the common signs and symptoms of heat illness;

(F) The importance to employees of immediately reporting to the employer, directly or through the employee's supervisor, symptoms or signs of heat illness in themselves, or in co-workers;

(G) The employer's procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary;

(H) The employer's 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) The employer's procedures for ensuring that, in the event of emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders.

(2) Supervisor training. Prior to assignment to supervision of employees working in the heat, training on the following topics shall be provided:

(A) The information required to be provided by section (e) (1) above.

(B) The procedures the supervisor is to follow to implement the applicable provisions in this section.

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

(3) The employer's procedures required by subsections (e)(1)(B), (G), (H), and (I) shall be in writing and shall be made available to employees and to representatives of the Division upon request.

Note: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

HISTORY

1. New section filed 8-22-2005 as an emergency; operative 8-22-2005 (Register 2005, No. 34). A Certificate of Compliance must be transmitted to OAL by 12-20-2005 or emergency language will be repealed by operation of law on the following day.

2. New section refiled 12-20-2005 as an emergency; operative 12-20-2005 (Register 2005, No. 51). A Certificate of Compliance must be transmitted to OAL by 4-19-2006 or emergency language will be repealed by operation of law on the following day.

3. New section refiled 4-19-2006 as an emergency; operative 4-19-2006 (Register 2006, No. 16). A Certificate of Compliance must be transmitted to OAL by 8-17-2006 or emergency language will be repealed by operation of law on the following day.

4. Certificate of Compliance as to 4-19-2006 order, including amendment of section heading and section, transmitted to OAL 6-16-2006 and filed 7-27-2006 (Register 2006, No. 30).

APPENDIX B

Heat Illness Prevention – TRAINING TIPS

1. When to Train

SMART TIPS

It is important for all workers and supervisors to be fully trained before they are assigned to work in locations where they are at risk for heat illness. It is critical that workers and supervisors are trained to recognize and report heat illness symptoms early before a more serious medical conditions arises.

Cal/OSHA investigations showed that:

- 46% of the reported cases of heat illness occurred on the employee's first day on the job
- 80% of the reported cases of heat illness occurred within the first four days of employment
- None of the victims of heat illness had any workplace training on acclimatization

2. Training Topics

Cal/OSHA regulations require specific training topics be covered.

SMART TIPS

When conducting employee and supervisor training, make sure not to discuss employees' own personal risk factors. Once employees and supervisors have been fully trained, encourage them to discuss freely any of their personal risk factors with their health care provider. If you happen to know that an employee has one or more personal risk factors it is important to make the necessary accommodations.

3. How to Train Effectively

SMART TIPS

Effective training communicates information in a language and by a method understandable to all employees. Make sure that employees and supervisors understand the information given to them. Information should be specific to employees' and supervisors' actual work conditions and activities.

To increase effectiveness repeat training as needed. One approach is to use daily "start-up" or "tailgate meetings". A reminder about heat illness prevention for the work to be performed that day can be given at the start of work. At other times training can be reinforced by using pictures, pamphlets, paycheck stuffers, videos, audiotapes, and other aides.

4. Checking for Understanding

SMART TIPS

Once trained, check to see if employees and supervisors have understood the information they received. You can do this in a number of ways including:

- Asking for feed back on the material
- Holding question and answer sessions
- Providing opportunities to practice and discuss new learning
- Using worksite observations

TYPES OF HEAT ILLNESS AND COMMON SIGNS/SYMPTOMS

Heat illness affects the body, causing employees with mild symptoms to experience weakness, tiredness, and mental confusion, or even exhibit irritable or erratic behavior. Heat illness can also affect employees work performance and increase their risk of having accidents.

WARNING

Employees should be encouraged never to discount any discomfort or symptoms they are experiencing when working in heat, after work or before the next workday. Heat illness symptoms can occur even after work has stopped. They should immediately report any problems they are experiencing to a supervisor and coworker, or a family member to seek prompt medical attention. Employees and supervisors must be fully trained on the prevention of heat illness before they are assigned to work in locations where they are at risk for heat illness.

Heat illness can be one or more of the following medical conditions including: heat rash, heat cramps, fainting, heat exhaustion, and heatstroke. The following symptoms are commonly associated with the different heat illness medical conditions. ***Given the variability in recognition and reporting of heat illness symptoms, the information listed below should be used only as a general guideline to train employees and supervisors***.

Heat Rash (Prickly Heat) - Heat rash is a skin irritation caused by excessive sweating and clogged pores during hot, humid weather.

General Symptoms:

- Can cover large parts of the body
- Looks like a red cluster of pimples or small blisters
- Often occurs on the neck, chest, groin, under the breasts, or in elbow creases
- Uncomfortable so it can disrupt sleep and work performance
- Complicated by infections

Heat Cramps - Heat cramps affect people who sweat a lot during strenuous work activity. Sweating makes the body loose salts and fluids and minerals. If only the fluids are replaced and not the salts and minerals painful muscles cramps may result.

General Symptom:

- Painful muscle spasms in the stomach, arms, legs, and other body parts may occur after work or at night

Fainting (Heat Syncope) - Employees who stand for long periods or suddenly get up from a sitting or lying position when working in the heat may experience sudden dizziness and fainting. In both cases, the fainting is caused by a lack of adequate blood supply to the brain. Dehydration and lack of acclimatization to work in warm or hot environments can increase the susceptibility to fainting. Victims normally recover consciousness rapidly after they faint.

General Symptoms:

- Sudden dizziness
- light-headedness
- unconsciousness

Heat Exhaustion - Heat exhaustion is the body's response to an excessive loss of the water and the salt contained in sweat. Older employees or those with high blood pressure are more susceptible to heat exhaustion.

WARNING

Cool skin temperature is not a valid indicator of a normal body temperature. Although the skin feels cool the internal body temperature may be dangerously high and a serious medical condition may exist.

General Symptoms:

- Heavy sweating
- Painful muscle cramps
- Extreme weakness and/or fatigue
- Nausea and/or vomiting
- Dizziness and/or headache
- Body temperature normal or slightly high
- Fainting
- Pulse fast and weak
- Breathing fast and shallow
- Clammy, pale, cool, and/or moist skin

Heatstroke

WARNING

Heatstroke is usually fatal unless emergency medical treatment is provided promptly.

General Symptoms:

- No sweating because the body cannot release heat or cool down
- Mental confusion, delirium, convulsions, dizziness
- Hot and dry skin (e.g., red, bluish, or mottled)
- Muscles may twitch uncontrollably
- Pulse can be rapid and weak
- Throbbing headache, shallow breathing, seizures and/or fits
- Unconsciousness and coma
- Body temperature may range from 102 - 104 °F or higher within 10-15 minutes

If the muscles begin to twitch uncontrollably, keep the person from self-injury. Do not place any objects in the mouth.

Monitor body temperature and continue cooling efforts until emergency medical treatment is provided to the victim.

Risk Factors

Heat build-up inside the body from physical work activities is the major source of heat load. In combination with this, working where the environmental and personal risk factors listed above are present, creates an even greater possibility that heat illness could occur.

WARNING

Cal/OSHA investigations (Study 2) ***showed that in 2006 heat illness cases occurred in temperatures as low as 80 °F***.

Environmental risk factors can increase the external heat load on the body. Personal risk factors may increase an individual's susceptibility to developing heat illness. For example, not drinking enough water or drinking alcohol can both cause dehydration. Other personal risk factors which may increase the risk of heat illness include previous heat illness, excessive weight of the person, and poor levels of fitness. They can also affect an individual's ability to acclimatize or adapt to working in hot or warm conditions.

More on Personal Risk Factors

Not Drinking Enough Water – In warm or hot conditions, drinking enough water (one quart per hour during the entire work shift) to stay healthy is vital for maintaining a normal body temperature. When working in these conditions the body looses a lot of water through sweating. Sweating helps lower the internal body heat but as the body continues to loose water it needs to be replaced it to prevent dehydration and heat illness. Dehydration results in less perspiration so the body cannot get rid of heat fast enough causing increased heat load. Without sufficient water the body overheats.

WARNING

Remind employees not to wait until they are thirsty to drink water. ***Being thirsty is not a good signal of the body's need for water. By the time a person is thirsty they may have already lost too much water and their work performance has already declined***. Employees should be encouraged to drink water frequently before and after work. Common symptoms of moderate to severe dehydration to make employees aware of and to have them check for include:

- Dark yellow or brown urine
- Reduced output of urine
- Rapid heart rate, muscle fatigue
- Loss of strength and dexterity
- Lightheadedness, dizziness
- Headache, blurred vision

Note: Drinking sufficient amounts of water allows for light or "straw" colored urine

WARNING

Alcohol consumption

It is important to avoid drinking alcohol altogether. This is because alcohol increases dehydration and the body's requirements for water. Sweating can cause the body to loose large amount of water. As the body becomes dehydrated more water is required to replace bodily fluids. Dehydration increases a person's susceptibility to heat illness and deteriorates their work performance. ***Therefore, it is important for employees working in warm or hot environments to drink sufficient amounts of water and avoid drinking any alcohol beverages.***

Lack of Acclimatization - In general, individuals are more susceptible to heat illness until their bodies have had time to adjust. Adjusting to working in the heat is called acclimatization.

WARNING

Individual differences

Acclimatization is important for all employees working in warm or hot temperatures or where other risk factors for heat illness are present. ***However, in any large group of workers, remember that there are wide differences in the ability of individuals to adapt to the heat. These differences in individuals can not be accurately predicted prior to exposure to warm or hot conditions***. For these reasons even some acclimatized individuals may still develop heat illness given the temperatures and other risk factors present at a particular worksite at a given time.

WARNING

Changes in work activities, locations or conditions

Even employees who were previously fully acclimatized may still be susceptible to heat illness and need further acclimatization when workplace conditions change. Such changes include:

- More physically demanding work tasks
- Working with required respiratory or personal protective equipment which reduce heat loss from the body
- Work locations with hotter temperatures
- A heat wave

Caffeine, Carbonated Sodas, Sports Drinks and Other Beverages - Sodas and drinks containing caffeine and sugar may increase dehydration. Therefore it is important to encourage employees to choose water over these types of drinks. Also, if employees choose these other drinks they may drink less water.

Note: The cautious use of sports drinks may be appropriate in the treatment of certain heat illnesses (e.g., heat cramps).

Medications and Drugs - Certain "over-the-counter" medicines, prescription medicines, and other drugs may increase the risk for heat illness and other serious medical conditions. These substances may alter the body's ability to deal with heat and reduce the individual's awareness of the symptoms of heat illness. Because of this it is important:

SMART TIPS

It is important:

- For employees to consult with their health care provider and inform them that they will be working in warm or hot conditions, before taking any prescription, "over-the-counter" medications or other drugs
- To only take these medications or other drugs under the advice of their doctor

More on Environmental Risk Factors

In California during the summers of 2005 and 2006 there were two heat wave periods. During these heat waves there were dramatic increases in heat illness cases reported to Cal/OSHA in comparison to the previous nine years. From 1995 – 2004 there were 31 heat illness cases investigated by Cal/OSHA with 15 being fatalities (Draft Meeting Summary, Cal/OSHA Heat Illness Advisory Process, 8TH Meeting, November 14, 2005, Oakland, California).

Cal/OSHA investigations (Study 2) showed that in 2006, 39 out of 46 heat illness cases occurred during a summer heat wave. This was due to weeks of consecutively high daytime temperatures and lack of overnight cooling.

Cal/OSHA investigations (Study 1) showed that in 2005 during a heat wave, there was a total of 25 cases of heat illness with 12 being fatalities. The investigations showed that 38% of these cases were serious enough to require hospitalization for longer than 24 hours with many requiring several days of hospitalization.

WARNING

Heat waves

During a heat wave the air temperatures and other environmental risk factors are more severe. ***This greatly increases the risk of developing heat illness (i.e., it can develop faster and be more serious and widespread among employees). During a heat wave even previously acclimatized employees are at risk for heat illness because the body has not had enough time to adjust to the sudden, abnormally high temperature or other extreme conditions.***

During a heat wave you must use extra measures to protect your employees.

Heat Waves - A heat wave is a sudden and temporary rise of temperature above the seasonal average for a particular region, which lasts for a prolonged period of time. The temperatures associated with a heat wave vary by geographical locations. It may also be accompanied by high humidity. Heat wave can be worse in low lying regions like valleys and depressions, where stagnant atmospheric conditions trap the lower layer of hot air preventing air circulation.

Heat build-up inside the body from physical work activities is the major source of heat load on the body. During a heat wave, the external heat load on the body from working in extremely hot temperatures is much greater. Also, if it does not cool down at night the heat load in the body continues to build up and the body never has a chance to cool down. This is especially true for employees who do not have access to air conditioned environments or other ways to cool down and rest in the evening. In addition, if there is humidity sweat does not readily evaporate off the skin. This greatly slows the body's natural processes of releasing heat to the surrounding environment causing the body to quickly overheat. These cumulative effects of a heat wave can occur over one or more days causing employees to return to work with increased risks of developing heat illness.

Personal Protective Equipment (PPE) - ***The more the body is covered with materials which limit cooling, the greater the potential risk for heat illness***. Wearing PPE which covers the body or face, limits air movement and the cooling effects of sweating. This results in the greatly reduced release of heat from the body to the surrounding environment and an ***increased heat load on the body. These factors make work tasks harder***.

The type and level of PPE worn and the nature and duration of the work tasks, are the main factors which determine employee's additional risk of heat illness from PPE. The types of PPE employees are required to wear can vary widely depending on their work tasks and exposures. PPE worn can range from hard hats, gloves or

boots all the way up to a fully encapsulating chemical protective suit and a self-contained breathing apparatus (SCBA).

Inappropriate Work Clothing - In warm or hot work environments, or where other environmental risk factors are present, wearing inappropriate work clothing (e.g., dark colored or tight fitting clothing), can increase the risk of heat illness. Under these conditions wearing appropriate work clothing can protect against the sun and other risk factors.

APPENDIX C

Documentation of Individual Training

HEAT ILLNESS PREVENTION TRAINING
DOCUMENT NUMBER:

INDIVIDUAL EMPLOYEE TRAINING DOCUMENTATION

NAME OF TRAINER/INSTRUCTOR:_____

TRAINING SUBJECT:

TRAINING MATERIALS USED:_____

EMPLOYEE:

_____

DATE OF HIRE/ASSIGNMENT:

I, _____, hereby certify that I received training on Cal/OSHA Heat Illness Prevention program, GISO 3395 and the following topics as checked:

1. [ ] Environmental and personal risk factors for heat illness

2. [ ] County's heat illness prevention plan and procedures

3. [ ] The importance of drinking water frequently throughout the day

4. [ ] Importance of acclimatization – allowing the body to adjust gradually to work in high heat

5. [ ] Types of heat illness and the signs and symptoms

6. [ ] Necessity of immediately reporting to the supervisor, any signs or symptoms of heat illness in yourself or co-worker

7. [ ] County's procedures for responding to symptoms

8. [ ] County's procedures for contacting emergency medical services, including alternative modes of transportation

9. [ ] County's procedures for emergency communications, including emergency response procedures such as location, local medical services, and communication alternatives

IF TRAINEE IS A SUPERVISOR

10. [ ] The procedure to follow to implement the applicable provisions of the County's Program.

11. [ ] The procedure to follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.

I agree to comply with the instructions received, and will participate fully with the Heat Illness Prevention Program.

EMPLOYEE SIGNATURE: _____ DATE_____

TRAINER SIGNATURE: _____ DATE_____