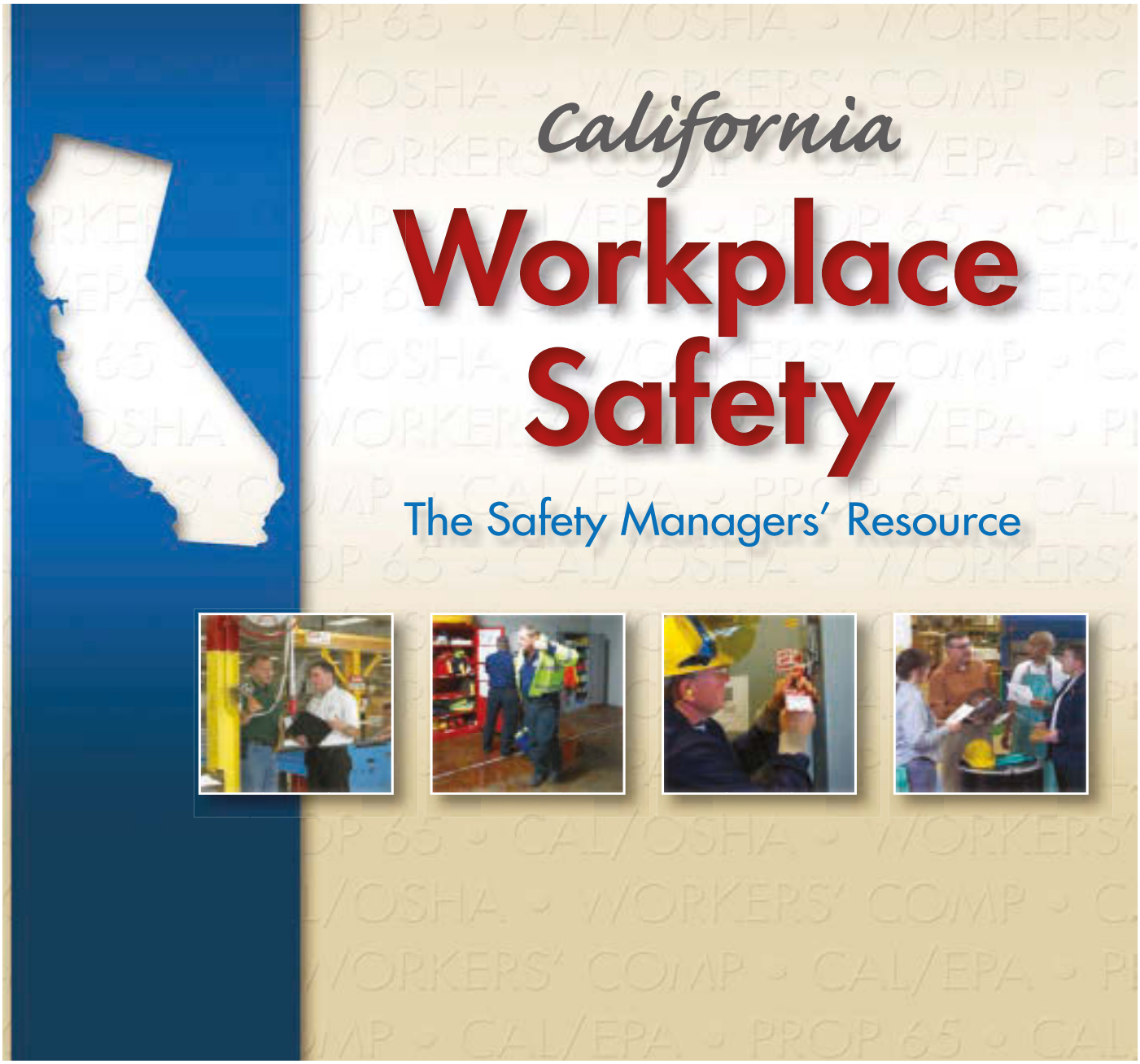

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CALIFORNIA WORKPLACE SAFETY MANUAL

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Introduction

If you are an owner or manager of a business in California, you are well aware that there are many government agencies you must answer to when it comes to employee safety and health. As a result, the process of navigating through a large number of complex regulations can leave you frustrated and at risk of facing large fines.

This is where California Workplace Safety: The Safety Managers' Resource can help. It provides a detailed overview of Cal/OSHA's most scrutinized regulations along with guidance on the steps that must be taken to be in compliance. Through the use of four tools — regulatory overview, customizable written plans, pre-written training programs, and inspection checklists — this manual provides the information and resources needed to assist you in your compliance efforts.

As an added benefit, key regulatory requirements relative to environmental protection, Proposition 65, and workers' compensation are also addressed.

What regulatory agencies should you be aware of?

Division of Workers' Compensation

The Division of Workers' Compensation (DWC) monitors the administration of workers' compensation claims, and provides administrative and judicial services to help in resolving disagreements that arise with claims of workers' compensation benefits.

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration (Cal/OSHA) is a state-level agency that establishes and enforces worker health and safety regulations. It consists of the following:

Division of Occupational Safety and Health (DOSH), which enforces California laws through its Cal/OSHA program and assists with workplace safety and health through on-site assistance, special programs, and educational materials.

Occupational Safety and Health Standards Board, which adopts and maintains reasonable and enforceable standards.

Occupational Safety and Health Appeals Board, which handles appeals regarding citations issued for alleged violations of workplace safety and health laws.

Commission on Health and Safety and Workers' Compensation, which oversees and recommends administrative or legislative modifications.

Division of Labor Standards Enforcement

The Division of Labor Standards Enforcement (DLSE) enforces minimum labor standards to make sure employees are not required or permitted to work under substandard, unlawful conditions. DLSE also investigates discrimination and public work complaints and settles wage claims.

California Environmental Protection Agency

The California Environmental Protection Agency (Cal/EPA) is a state-level agency that was formed to restore, protect, and enhance the environment. It consists of the state's six major environmental departments, boards, and offices that focus on air, pesticides, toxic substances, waste management, health hazards, and water resources. Cal/EPA's primary responsibility is to implement and enforce environmental rules and regulations.

Office of Environmental Health Hazard Assessment

The Office of Environmental Health Hazard Assessment (OEHHA) aims to protect and enhance public health and the environment by scientific evaluation of risks posed by hazardous substances.

Important: The California employer must comply with all of the federal regulations, as well as any state-specific standards that apply. Both federal EPA and OSHA keep a close eye on California's programs, which must always meet or exceed the federal requirements.

How this manual can help?

The California Workplace Safety: The Safety Manager's Resource, formerly called Workplace Safety: A Manual For California Business, contains the knowledge and tools California employers need to remain proactive in their safety efforts.

Whether you are looking for a regulatory overview and guidance on the most scrutinized regulations or need a starting point for your written safety plans, training programs, and inspection checklists, this manual contains information that can assist you in creating and maintaining safe and healthful working conditions for all California working men and women.

Revision bars, like the one at the left of this paragraph, are used in this publication to show where significant changes were made on update pages. The revision bar next to text on a page indicates that the text was revised. The date at the bottom of the page tells you when the revised page was issued.

Due to the constantly changing nature of government regulations, it is impossible to guarantee absolute accuracy of the material contained herein. The Publisher and Editors, therefore, cannot assume any responsibility for omissions, errors, misprinting, or ambiguity contained within this publication and shall not be held liable in any degree for any loss or injury caused by such omission, error, misprinting or ambiguity presented in this publication.

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Heat illness prevention

Overview

Introduction

Maintaining a safe work environment may be more challenging than employers think, especially if workers are being exposed to hot temperatures. Heat stress is caused by a number interacting factors, including environmental conditions, clothing, workload, and the individual characteristics of the worker. Whether it's the result of seasonal fluctuations or the type of work performed at the facility, extreme temperatures can affect the body's natural ability to handle heat, which can lead to heat illness. Since everyone reacts differently to heat, it is difficult to predict who will or will not be affected. Although encouraging employees to drink fluids and take frequent rest breaks is important, you cannot overlook other methods to protect employees from heat exposure.

Scope

On August 22, 2005, Cal/OSHA put a heat illness prevention regulation into effect, Title 8, CCR §3395, which applies to all outdoor places of employment. This includes employees in industries such as agriculture; construction; landscaping; oil and gas extraction; and transportation or delivery of agricultural products, construction materials, or other heavy materials (e.g. furniture, lumber, freight, cargo, cabinets, industrial or commercial materials), except for employment that consists of operating an air-conditioned vehicle and does not include loading or unloading.

Although Title 8, CCR §3395 is not applicable to indoor work environments, Cal/OSHA says that employers with employees near sources of heat or inside buildings with limited cooling capabilities must ensure that their Injury and Illness Prevention Program (IIPP) is effective and in writing. This means that the IIPP must ensure that work areas with risk of heat illness have been identified and evaluated, and appropriate corrective measures and training have been implemented to protect workers. The IIPP regulation at Title 8, CCR §3203 directs employers to address all health or safety hazards within their worksite including heat illness. Other regulations that apply include, but are not limited to: Title 8, CCR §3363 Water Supply, and Title 8, CCR §3400 Medical Services and First Aid.

Another law to be aware of when it comes to heat illness prevention is 226.7 of the Labor Code. This law has been updated with requirements that make it against the law to require an employee to work during a meal or rest or recovery period — including the cooldown period that must be afforded to an employee to prevent heat illness — mandated in accordance with an applicable statute, or regulation, standard, or order of the Industrial Welfare Commission, the Occupational Safety and Health Standards Board, or the Division of Occupational Safety and Health. Under Labor Code 226.7, if an employer fails to provide an employee a meal or rest or recovery period in accordance with a state law or other regulation, standard, or order as listed above, the employer must pay the employee one additional hour of pay at the employee's regular rate of compensation for each workday that the meal or rest or recovery period is not provided. This requirement does not apply to an employee who is exempt from meal or rest or recovery period requirements pursuant to other state laws, including, but not limited to, a statute or regulation, standard, or order of the Industrial Welfare Commission.

For more details on this requirement, which was approved by the Governor and filed with the Secretary of State on October 10, 2013, visit http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB435

Regulatory citations

- Title 8, CCR §3395. Heat Illness Prevention,
- Title 8, CCR §3203. Injury and Illness Program,
- Title 8, CCR §3363. Water Supply,

- Title 8, CCR §3400. Medical Services and First Aid, and
- 226.7. California Labor Code – Meals and rest periods.

Key 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.
- **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.
- **Heat cramps**: means painful, involuntary muscle spasms that usually occur during heavy exercise in hot environments. Fluid and electrolyte loss often contribute to heat cramps.
- **Heat exhaustion**: means a condition whose symptoms may include heavy sweating and a rapid pulse, a result of the body overheating. Causes of heat exhaustion include exposure to high temperatures, particularly when combined with high humidity, and strenuous physical activity. Without prompt treatment, heat exhaustion can lead to heatstroke, a life-threatening condition.
- **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.
- **Heat stroke**: means when the body becomes unable to control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. Body temperature may rise to 106°F or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not provided.
- **Heat syncope (fainting)**: means a mild form of heat illness that often results from physical exertion when it is hot. It occurs when the body, in an effort to cool itself, causes the blood vessels to dilate to such an extent that blood flow to the brain is reduced and fainting occurs.
- **High heat**: means temperatures that equal or exceed 95°F.
- **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.
- **Potable water**: means fit to drink.
- **Shade**: means 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**: means 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.

Summary of requirements

In general, the standard requires covered employers to:

- **Establish, implement, and maintain, a heat illness prevention plan.** The plan shall be in writing in both English and the language understood by the majority of the employees and shall be made available at the worksite to employees and to representatives of the Division upon request.
- **Access to water**, is a key preventive measure against heat illness. Employees must be encouraged to frequently drink water, especially during a heat wave.
- **Access to shade**, is an important way to allow employees to cool down.
- **High-heat procedures.** The employer shall implement high-heat procedures when the temperature equals or exceeds 95°F.
- **Emergency Response Procedures.** The Employer shall implement effective emergency response procedures
- **Acclimatization**, is a gradual and temporary adjustment of the body to work in the heat.
- **Training**, all employees and supervisors need to know the importance of frequent drinking of water and resting in cooled areas, the signs and symptoms of heat illness and how to respond in an emergency.
- **Emergency Response Procedures**, must be part of the written plan and include steps to be followed to ensure a rapid response.

In-depth

Consider the risk factors

When evaluating a hot work environment, there are risk factors to consider. A person's sensitivity to heat can be affected by physical factors such as age, weight, degree of physical fitness, medical conditions, metabolism, etc. Environmental factors also play a powerful role, including air temperature, humidity, radiant heat, conductive heat sources, clothing, and personal protective equipment.

Classify the work

There's more to measuring heat exposure than simply sampling the air temperature. The type of work being performed also has an impact on the body's ability to handle heat. Work can be classified as light, moderate, or heavy depending on the amount of metabolic energy required. For example:

- Light hand work — writing
- Heavy hand work — typing
- Heavy work with one arm — hammering nails
- Light work with two arms — filing metal
- Moderate work with the body — cleaning the floor
- Heavy work with the body— digging

Balance the heat

For the human body to function properly, a core body temperature of 98.6 degrees Fahrenheit (^{o}F) must be maintained. This means that there has to be a constant exchange of heat between a person's body and his/her environment, which can be affected by air temperature; humidity; skin temperature; air speed; radiant temperature; and the type, amount, and characteristics of the clothing being worn.

Based on the National Institute for Occupational Safety and Health's (NIOSH) dry bulb temperature measurement — which measures ambient air with a thermometer — most people feel comfortable

at 71.6°F - 77.9°F while performing light work. However, as work intensity is increased, the air temperature needs to be decreased to maintain a comfortable temperature.

For work environments where high humidity and low air speed are factors, NIOSH determined that 86°F is the maximum temperature for light work before performance is affected. For moderate levels of physical work, 82.4°F is the upper limit. Based on these wet bulb temperature measurements — which use an instrument to measure humidity — temperatures that reach beyond these threshold values could result in decreased employee performance, increased accidents, and heat illness.

Use engineering controls

You can prevent employee exposure to excessive heat, which can cause a variety of heat-induced disorders, by using a variety of engineering controls.

Convective heat control

One way to increase the rate of heat a body loses is by modifying air temperature and air movement across the skin. However, the amount of heat a body loses also depends on how quickly the air moves over the skin.

Therefore, if air temperature is above 80°F (skin temperature), consider:

- Reducing air temperature by bringing in outside air or using air conditioning,
- Reducing air movement across the skin to permit sweat to evaporate freely, and
- Wearing one-layer of work clothing.

If air temperature is below the skin temperature, consider:

- Increasing air movement across the skin through ventilation, and
- Reducing the amount of clothing.

For employers covered under §3395, when the temperature equals or exceeds 95°F, high-heat preventive procedures must be implemented. These include the following:

Radiant heat control

Radiant heat comes from the sun and other sources such as certain high temperature manufacturing equipment (e.g., radiant ovens). The only engineering approach that can be used to control radiant heat is shielding employees from the source.

This can be accomplished by:

- Relocating, insulating, or cooling the heat source;
- Placing line-of-sight radiant reflective shielding between the heat source and your employees; or
- Changing how much heat is emitted from the hot surface by applying a coating over the material.

When considering these alternatives, radiant reflective shielding is usually the easiest and most inexpensive solution. Shielding can reduce the heat load by as much as 80 to 85 percent, according to NIOSH.

Evaporative heat control

Heat is lost from the body when sweat is evaporated from the skin's surface. How a body naturally reduces heat depends on air movement over the skin and the amount of humidity in the air.

The use of engineering controls can help this natural process. Although fans and blowers are often used, air conditioning equipment is usually required. Also, look at eliminating additional sources of water vapor. Possible sources from manufacturing processes that could be eliminated include steam

leaks from valves and lines and evaporation of water from wet floors. Eliminating these sources can help reduce the overall vapor pressure in the air and increase the evaporation of sweat from the surface of skin.

Use administrative controls

Where the use of engineering controls may be impossible or impractical, or where the level of environmental heat stress may be unpredictable, other solutions should be considered. Work practices and administrative controls can also be effective ways to reduce the level of heat stress on employees.

Cal/OSHA expects employers to take the following steps to prevent heat illness:

- **Pre-shift meetings:** When the temperature in the area is predicted to be 95°F or above the employer is required to conduct pre-shift meetings. The meetings are intended to be brief and should review the company's high-heat procedures. For example those employees should drink plenty of water and take shaded cool-down rests when necessary.
- **Frequent drinking of water:** Water is a key preventive measure against heat illness. Employers need to facilitate and encourage the frequent drinking of water, and to be on the lookout for work situations that interfere with access to water, especially during a heat wave.
- **Resting in cooler areas:** Rest breaks provide time for cooling and the opportunity to drink water. Workers must have access to rest breaks in cooled or air conditioned areas and away form the sources of heat, particularly during a heat wave.
- **Acclimatization and weather monitoring:** Acclimatization is a gradual and temporary adjustment of the body to work in the heat. People need several days to adjust when working conditions are significantly hotter than normal. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat. The weather is another significant factor and requires monitoring by employers and supervisors. Although there is no specific requirement on how to respond, it is up to employers to make their best judgment on what to instruct supervisors to do in reaction to hot weather advisories. The supervisor should use a thermometer to keep track of the temperature at the worksite on hot days. Also, make sure to institute additional water and rest breaks during a heat wave. Indoor workers face a higher risk of heat illness during periods of high temperatures, if they are working in a building that is not temperature controlled.
- **Being prepared for emergencies:** Written procedures must include steps to be followed in an emergency, which will ensure a rapid effective response, including instructing workers on how to reach 911 despite possible language barriers, how to give instructions to find the worksite and how to administer first aid while an ambulance is in route.
- **Employee and supervisor training:** All workers and supervisors need to know about the importance of frequent drinking of water and resting in cooled areas, the signs and symptoms of heat illness, how to respond and who to report to when someone feels sick and may need to go to the hospital. A Cal/OSHA heat illness study revealed that supervisor training made a significant difference in the outcome of heat illness cases: victims whose supervisors were not trained on heat illness prevention were twice as likely to die as victims whose supervisors had received training. Hence, the effectiveness of your Heat Illness Prevention Procedures depends greatly on how you train your supervisor.

You could also:

- Limit or modify employee exposure to the heat through shift rotation or modified work schedules;
- Screen employees for heat intolerance.

Cal/OSHA interpretation of standard

To understand how Cal/OSHA interprets and enforces the standard, the agency provided a supplemental question and answer document, which is highlighted below.

Outdoor places of employment

An outdoor place of employment is best thought of as one that is not an indoor workplace. A workplace with a roof and enclosed sides is generally considered an indoor workplace.

For the purposes of this standard, the important quality of the majority of indoor workplaces is that they reduce the risk factors that commonly lead to heat illness. (For information about environmental risk factors for heat illness, see Q&A Nos. 4 and 5.) For example, building codes require that buildings provide sufficient ventilation, either by natural or mechanical means. Indoor workplaces usually also block exposure to direct sunlight.

On the other hand, open areas like agricultural fields, forests, parks, equipment and storage yards, outdoor utility installations, tarmacs, and roads, are obvious examples of outdoor workplaces. Outdoor workplaces also include construction sites in which no building shell has been completed and areas of construction sites that are outside of any building shells that may be present. Outdoor areas adjacent to buildings, e.g., loading docks, are also considered outdoor places of employment if an employee spends a significant amount of time working in them.

Sheds, packing sheds, and partial or temporary structures such as tents, lean-tos, and structures with one or more open sides can be either indoor or outdoor workplaces depending on the circumstances. In many cases these structures may actually be hotter than the environment outside of them because of heating by the sun and conditions inside like limited air circulation or lack of insulation. DOSH considers a structure in this category to be an outdoor workplace if it does not significantly reduce the net effect of the environmental risk factors that exist immediately outside of the structure.

Sufficient access to drinking water

Adequate water is required at all times, regardless of outdoor temperature and must be made available at no cost to the employee.

Water quality and amount: Potable drinking water must always be placed in locations readily accessible and free of charge to all employees. The water provided must be fresh and pure, suitably cool, and in sufficient amounts, taking into account the air temperature, humidity, and the nature of the work performed, to meet the needs of all employees.

Water must be fit to drink. Water containers must be filled directly from a potable water supply. Water containers CAN NOT be refilled from non-potable water sources (i.e. sprinkler or firefighting systems), or connections that allow for potentially harmful contamination of public water systems (i.e. water hose) or from non-approved or non-tested water sources (i.e. untested-wells).

Where unlimited drinking water is not immediately available from a plumbed system or otherwise continuously supplied, the employer must provide enough water for every employee to be able to drink one quart of water, or four 8-ounce cups, per hour. The water must always be cool, and in very hot weather it is recommended that employers have ice on hand to keep the water cool.

If an employer chooses not to provide the full-shift quantity of drinking water at the start of a work shift (e.g., 2 gallons per employee for an 8-hour shift), the standard requires effective procedures for drinking-water replenishment to allow each employee to drink one quart per hour. This means a sufficient quantity of water must always be present and readily accessible to allow every employee to consume at least one quart of water per hour until such time that the water supply has been replenished.

A water-supply procedure that depends on replenishment during the work shift is out of compliance if it is not reliable. An employer is also out of compliance if at any time drinking water is not available to employees, or if the practice is to wait until the water vessel is empty to replenish it. It is similarly impermissible for an employer to replenish the drinking-water supply only when requested by employees.

Distance: Water must always be readily accessible. DOSH interprets this phrase to mean that the water should be as close to the employee as is practicable, given the working conditions and layout of the worksite. On inspection, if a DOSH inspector questions whether the water supply is close enough to the employees, he or she will ask the supervisor present to explain the factors taken into consideration by the employer in determining the placement of water. DOSH must by law accept placement of the water at a distance that is reasonable under the circumstances.

Employers should build their water placement strategies around a sound understanding of the fact that the more an employee has to interrupt work in order to drink, the greater will be the likelihood that the employee will not be drinking as much water as is necessary to protect fully against heat illness. An employer may choose to augment an existing water supply that is compliant and readily accessible by providing a beverage container (preferably insulated) to be carried and used by the employee while working. The employee must be encouraged to refill the container from the employer's drinking-water supply, and clean and maintain it as needed.

Importance of water: Water is the body's single best defense against heat other than removing heat exposure itself. In conditions of high heat and strenuous work, the human body can lose over a quart of fluid per hour just by sweating. Continuous replacement of this lost fluid is critical to allowing the body to maintain the life-preserving cooling benefits of perspiration. This is why assuring the presence of, ready access to, and consumption of pure, fresh, and cool drinking water is so important.

Encouragement to drink water: The standard requires not only that water be provided, but that employers encourage employees to drink it frequently. The importance of this cannot be overstated. Employees are there to work, and many of them may not feel how urgently their bodies need water. This is an unfortunate but preventable cause of heat illness.

Employers must emphasize this in their training sessions and stress the importance of frequent drinking of water throughout the day, especially in high heat. This can be significantly facilitated by steps such as removing any barriers that may exist to access, making the access distance as short as reasonable, and making the water station inviting by using ice and shade.

The 2006 Cal/OSHA Heat Illness Case Study showed that although 90% of the worksites had drinking water at the site, 96% of the employees suffering from heat illnesses were dehydrated.

Water temperature and use of ice: When temperatures exceed 90°F, having ice on hand to cool the water is recommended. Cool water adds the extra benefit of providing direct cooling to the body immediately upon consumption, independent of perspiration. However, care must be taken to ensure that water is not too cold as to discourage workers from drinking it.

Sufficient access to shade

Actual presence of shade: The heat illness prevention standard requires that employers have and maintain one or more areas with shade at all times while employees are present, when the outdoor temperature exceeds 80°F. It is always advisable to have shade present even when temperatures do not exceed 80°F, if the weather is hot enough to make shade a useful tool for cooling off.

The shaded area(s) must be either open to the air or provided with ventilation or cooling. The amount of shade present shall be at least enough to accommodate the number of employees on recovery or rest periods, so that they can sit in a normal posture fully in the shade without having to be in physical contact with each other.

When the temperature does not exceed 80°F, employers must provide prompt access to shade when requested by an employee.

Employers should monitor predicted weather temperatures in advance, for example via TV or radio, so that they can have a general idea when the temperature is likely to exceed 80°F.

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

Quality: Shade is blockage of direct sunlight. Blockage is always sufficient when objects do not cast a shadow in the shaded area. An enclosed area used to provide shade must allow cooling at least comparable to the cooling that would be provided in a shaded unenclosed area in the same location.

Sources: Shade may be provided by any natural or artificial means that do not expose employees to unsafe or unhealthy conditions.

For example, shade can be provided by buildings, canopies, lean-tos, or other partial or temporary structures that are either ventilated or open to air movement. Trees and dense vines can provide shade that is superior to artificially provided shade and are accepted as compliant sources of shade if the following conditions are met. First, that the canopy of the trees or vines must be sufficiently dense to provide substantially complete blockage of direct sunlight. Second that the vines or branches from the trees must not be so low to the ground that employees must crouch or cannot sit up straight without contacting vegetation.

Flecks of sunlight are acceptable as long as, overall, the shade provides substantially complete blockage of sunlight. Where trees or other vegetation are used to provide shade, the thickness and shape of the canopy must, given the changing angles of the sun, result in a sufficient shadow being cast to protect employees from the sun during the entire shift.

The interior of a vehicle may not be used to provide shade unless the vehicle is air-conditioned and the air conditioner is operating. Similarly, metal storage sheds and other out-buildings do not provide protection from sunlight that meets the definition of shade unless they provide a cooling environment comparable to shade in open air (i.e., they must be mechanically ventilated or open to air movement).

Conditions of access: The shaded area must let employees assume a comfortable posture and must not cause exposure to another health or safety hazard. Therefore, the shade requirement cannot be met by using areas underneath mobile equipment, like a tractor, or areas that require employees to crouch in order to sit fully in the shade. The shaded area must not deter or discourage employee use.

Shade availability: The amount of shade present must be at least enough to accommodate the number of employees on recovery or cool-down rest periods, so that employees can sit comfortably and fully in the shade without touching each other.

During the shift, there must always be enough shade to accommodate those employees who seek it to cool off as required by the standard. Employers should anticipate that the hotter the weather gets, the more employees are likely to seek shade at the same time. This does not mean there must be enough shade to accommodate all employees on the shift at the same time, however. Rather, an employer may comply by adopting a procedure to ensure that employees who desire access to shade will not be deprived of it due to lack of space. One such procedure would be for the rotation of employees in and out of shaded areas to ensure all have sufficient access for a minimum of five minute interval, however, employees cannot be rushed as specified in the standard. Another would be to set up additional shade structures as needed. Any such procedure must be clearly and accurately described by the employer's written heat illness prevention procedures.

An employee that takes a preventative cool-down rest must be monitored and asked if he or she is experiencing any symptoms of heat illness. If the employee is showing symptoms or reports symptoms of heat illness they will be monitored continuously until the signs or symptoms have abated. Continuous monitoring shall be no less than five-minutes, plus the amount of time it took the employee to reach the shaded area. Appropriate first aid and/or emergency response shall be provided depending on the severity of the symptoms. If during a preventative cool-down rest no symptoms are observed or reported the observation of the employee can be periodic instead of continuous.

Proximity to shade: The shade must be close enough to accomplish the fundamental purpose of the standard, which is to provide reasonable access to shade as dictated by the need for cooling the body in hot weather. What is reasonable depends on the nature and circumstances of the work and how much heat load the weather and the work are placing on the body. As the weather becomes critically hot, the more critical it becomes to ensure ready access to shade and water without delay. The shaded area must be as close as practical to the area where employees are working, but no more than a 2.5 minute walk away. The hotter the weather, the closer the shade or shade structure needs to be to the workers.

Note: The time it realistically takes to get to the shaded area is the critical consideration, and this will be taken into consideration if the means of access is by vehicle instead of walking.

During meal periods: The employer must provide enough shade for all of the employees who choose to remain in the general area of work or in areas designated for recovery and rest periods. Employers may rotate employees in and out of meal periods, as with recovery and rest periods. Employers are not required to provide shade for employees who choose to spend meal periods in their own air-conditioned vehicles. However, employers may not require or pressure employees to eat their lunch in their own vehicles or go off-site to eat.

Shade structure: When the employer can demonstrate that a shade structure would be unsafe or infeasible, then the employer may provide alternate access to shade that provides equivalent protection, if:

- Erecting shade is problematic such as near the edge of a trench or ravine, or
- When high winds won't allow a shade structure to be opened or to be placed near workers without risking it flying away and hitting them, or
- establishing a shade structure on a continuous basis is infeasible due to employees constantly moving from site to site (i.e. meter readers or irrigation installers).

In these cases the employer must document this determination and specify what alternatives to shade will be provided which afford equivalent protection.

Use of other cooling measures: Non-agricultural employers may provide cooling measures other than shade, if they can demonstrate that the alternative is at least as effective as shade. For example, misting machines are acceptable when the employer can demonstrate that they are at least as effective as shade at allowing the body to cool.

Encouraging use of shade: The employer is required to allow and encourage employees to take a cool-down rest in the shade for a period of no less than five minutes at a time when they feel the need to do so to protect themselves from overheating. The purpose of the cool-down rest in the shade is to reduce heat stress on the employee. Shade removes sunlight as a source of heat, and since people produce more metabolic heat while working, resting reduces this as a source of heat stress, while also reducing the heart rate. Cool, fresh water should be available in the recovery area to encourage employees to drink it.

Encouraging employees to take a cool-down rest in the shade is of primary importance particularly for employees that are paid on a piece rate basis, as they would be less inclined to use this preventive rest.

Access to shade must be allowed at all times, and the employee must be allowed to remain in the shade for at least five minutes. The importance of prevention cannot be overstated. By waiting until symptoms appear before seeking shade and recovery, employees are at significant risk of developing serious heat illness, and the preventative purpose of the standard is defeated. When employees opt to access shade, employers should use this as an opportunity to encourage them to drink as much water as they comfortably can.

The cool-down rest in the shade is not a substitute for medical treatment. If an employee has any symptoms of heat illness, first-aid procedures should be initiated without delay. Common early signs and symptoms of heat illness include headache, muscle cramps, and unusual fatigue. However, progression to more serious illness can be rapid, and can include loss of consciousness, seizures, mental confusion, unusual behavior, nausea or vomiting, hot dry skin, or unusually profuse sweating.

Any of these symptoms requires immediate attention. Even the initial symptoms may indicate serious heat exposure. If medical personnel are not immediately available onsite and serious heat illness is suspected, emergency medical personnel should be immediately contacted and on-site first aid undertaken. No employee with symptoms of possible serious heat illness should be left unattended or sent home without medical assessment and authorization.

High-heat procedures

During periods of high heat, which is defined as temperatures that equal or exceed 95°F, it is crucial that employees be monitored for early signs and symptoms of heat illness. Symptoms can quickly escalate from minor to life threatening and it is important that employees receive immediate first aid or emergency medical treatment. Employers are allowed to use different methods to observe their employees. It is important to choose a method that ascertains the condition of employees at regular intervals and provides emergency services when symptoms are reported or when an employee working alone is unable to respond.

Observing employees: Because each work site is different employers are given options and flexibility in observing and monitoring employees. When employees work in small groups of no more than 20, direct observation by a supervisor or designated employee may be sufficient. When there are more than 20 employees the employer may use the buddy system and pair up employees. Under the buddy system the employer is required to train employees to:

- Stay in contact with each other,
- Observe each other throughout the day,
- Know what the symptoms of heat illness are, and
- Immediately report any signs or symptoms observed.

Employees that are required to work alone must have a dependable communication system. Communication with the employee can be by radio or cell phone in locations where there is adequate coverage. The employee must be contacted regularly and as frequently as possible, since an employee in distress may not be able to call for help.

Emergency designated employees: The employer must designate one or more employees at each work site to have the authority to contact emergency medical services if an employee is suffering from heat illness. The designated employee can be either supervisory or non-supervisory. If a designated employee is not available any employee may call for emergency medical services.

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