

ALUM ROCK UNION ELEMENTARY SCHOOL DISTRICT



HEAT STRESS PREVENTION PLAN

Updated July 8, 2022

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Scope: This Plan covers employees who are exposed to heat or hot conditions at or above the threshold levels for work areas and activities identified in the heat stress hazard assessment.

Policy: This organization is committed to protecting employees from the hazards of hot conditions and to preventing heat-related illnesses at the workplace. We will identify, evaluate, and control potential exposure of our employees to extreme temperature, humidity, and other heat-related factors.

Evaporative cooling takes place when sweat evaporates from the skin. High humidity reduces the rate of evaporation and thus reduces the effectiveness of the body's primary cooling mechanism.

Globe temperature is the temperature inside a blackened, hollow, thin copper globe.

Heat is a measure of energy that is transferred by a difference in temperature.

Metabolic heat is a by-product of the body's activity.

Natural wet bulb (NWB) temperature is measured by exposing a wet sensor, such as a wet cotton wick fitted over the bulb of a thermometer, to the effects of evaporation and convection. The term "natural" refers to the movement of air around the sensor.

Radiation is the transfer of heat energy through space. A worker whose body temperature is greater than the temperature of the surrounding surfaces radiates heat to these surfaces. Hot surfaces and infrared light sources radiate heat that can increase the body's heat load.

Heat-Related Illnesses

Illness as defined by OSHA is generally not instantaneous and occurs some time (hours or days) after the initial exposure to an occupational hazard. For example, an instantaneous reaction such as a burn after touching a hot surface is considered an injury; whereas a delayed reaction to a hot environment such as heat exhaustion that occurs hours after the initial exposure is considered an illness.

Heat collapse is a condition where the brain does not receive enough oxygen because blood pools in the extremities, resulting in a loss of consciousness (fainting or syncope). This reaction is similar to that of heat exhaustion and does not affect the body's heat balance. However, the onset of heat collapse is rapid and unpredictable. Heat syncope is a fainting episode or dizziness that usually occurs with prolonged standing or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

Heat cramps are usually caused by performing hard physical labor in a hot environment. These cramps have been attributed to an electrolyte imbalance caused by sweating. Cramps can be caused by both too much and too little salt. Cramps appear to be caused by the lack of water replenishment. Because sweat is a hypotonic solution ($\pm 0.3\%$ sodium chloride), excess salt can build up in the body if the water lost through sweating is not replaced. Thirst cannot be relied on as a guide to the need for water; instead, water must be taken every 15 to 20 minutes in hot environments. Under extreme conditions, such as working for 6 to 8 hours in heavy protective gear, a loss of sodium may occur. Recent studies have shown that drinking commercially available carbohydrate-electrolyte replacement liquids is effective in minimizing physiological disturbances during recovery.

Heat exhaustion is a condition with symptoms of headache, nausea, vertigo, weakness, thirst, and giddiness. Fainting associated with heat exhaustion can be dangerous because the victim may be operating machinery or controlling an operation that should not be left unattended; moreover, the victim may be injured when he or she faints. Also, the signs and symptoms seen in heat exhaustion are similar to those of heat stroke, a medical emergency.

Heat Stress Factors

The following workplace factors will be considered in the assessment for heat stress:

- Air temperature
- Radiant heat sources
- Conductive heat sources
- Humidity
- Direct physical contact with hot objects
- Workload activity and duration
- Semipermeable or impermeable protective clothing

The following worker heat sensitivity factors will also be considered in evaluating the potential for heat stress:

- Age
- Weight
- Degree of physical fitness
- Degree of acclimatization
- Metabolism
- Use of alcohol or drugs
- Medical conditions such as hypertension
- Prior heat injury (predisposes an individual to additional injury)

HEAT STRESS PREVENTION PROGRAM

This Heat Stress Prevention Program describes controls and work practices to protect employees from heat stress while working in hot conditions.

Program Implementation Criteria

The Administrator or designee will implement the Heat Stress Prevention Program when the action levels for hot conditions in the WBGT are exceeded.

Heat Stress Engineering Controls

The following engineering controls will be implemented before and in combination with work practices.

General Ventilation

General ventilation will be used where feasible and practical to dilute hot air with cooler air. Portable or local exhaust systems will be provided for small areas where general ventilation is not feasible or practical. If the dry bulb temperature is higher than 35°C (95°F) and the air is dry, evaporative cooling may be improved by air movement. When the dry bulb temperature exceeds 35°C and the relative humidity is 100%, air movement will make the worker hotter and forced ventilation will not be used to alleviate heat stress.

Fans

Fans will be provided where general ventilation is insufficient or impractical and when evaporative cooling will be improved by air movement.

Reflective Clothing

Reflective clothing varies from aprons and jackets to suits that completely enclose the worker from neck to feet and can stop the skin from absorbing radiant heat. Because most reflective clothing does not allow air exchange through the garment, the reduction of radiant heat must more than offset the corresponding loss in evaporative cooling. For this reason, reflective clothing should be worn as loosely as possible. In situations where radiant heat is high, auxiliary cooling systems can be used under the reflective clothing.

Wetted Clothing

Wetted clothing is effective when reflective or other impermeable protective clothing is worn. The clothing may be wetted terry cloth coveralls or wetted two-piece, whole-body cotton suits. This approach is effective under conditions of high temperature and low humidity where evaporation from the wetted garment is not restricted.

EMERGENCY RESPONSE

The Administrator or designee will implement the following emergency response procedures for the type of heat stress indicated.

Heat Stroke

If a worker shows signs of possible heat stroke, professional medical treatment will be obtained immediately. The supervisor or co-workers will take the following steps to treat a worker with heat stroke:

1. Call 911 and notify the supervisor.
2. Move the sick worker to a cool, shaded area.
3. Cool the worker using methods such as soaking his or her clothes with water, spraying, sponging, or showering him or her with water, and fanning his or her body.

The worker should be placed in a shady area and the outer clothing should be removed. The worker's skin should be wetted and air movement around the worker should be increased to improve evaporative cooling until professional methods of cooling are initiated and the seriousness of the condition can be assessed. Fluids should be replaced as soon as possible. The medical outcome of an episode of heat stroke depends on the victim's physical fitness and the timing and effectiveness of first-aid treatment. Regardless of the worker's protests, no employee suspected of being ill from heat stroke should be sent home or left unattended unless a physician has specifically approved such an order.

Heat Exhaustion

Heat exhaustion responds readily to prompt treatment. A worker suffering from heat exhaustion should:

- Rest in a cool, shaded, or air-conditioned area.
- Drink plenty of water or other cool, nonalcoholic beverages.
- Take a cool shower, bath, or sponge bath.

- First aid and other emergency response procedures

Refresher Training

Personnel covered by this Plan will receive refresher heat stress training at least once per year, and whenever there is a change in work assignment or hot conditions, or when a new heat source is introduced to a work area.

RECORDKEEPING

Heat stress-related illnesses that are relieved by first aid and do not require additional medical treatment will not be recorded in injury and illness records.

Heat stress-related illnesses that require medical treatment will be recorded as an illness and/or injury on illness recordkeeping forms. For example, the administration of fluids by intravenous injections is recordable as medical treatment, and more serious cases of heat disorders involving such injections will be entered into the injury and illness records. In addition, any diagnosis by a physician or other licensed healthcare professional of heat syncope (fainting due to heat) will be recorded.