



BIE SAFETY ADVISOR

Summer Is Here, Are Your Employees Prepared for Outdoor Work?

It is hard to believe that a few months ago we were preparing our workers for working in winter weather conditions, now with summer in full swing, we need to make sure they are prepared for outdoor summer work.

At times, our workers may be required to work in hot environments for long periods. When the human body is unable to maintain a normal temperature, heat illnesses can occur and may result in death. It is also important to consider that hot work environments may exist indoors as well in the field of construction. This article provides information to employers on measures they should take to prevent worker illnesses and death caused by heat stress. The attached tool box talk is a great training aid to help workers become familiar with the various stages of heat related illness.

Occupational Factors that May Contribute to Heat Illness

- High temperature and humidity
- Low fluid consumption
- Direct sun exposure (with no shade) or extreme heat
- Limited air movement (no breeze or wind)
- Physical exertion
- Use of bulky protective clothing and equipment

Prevention Made Simple: Program Elements

Heat Illness Prevention Program key elements include a person designated to oversee the heat illness prevention program, hazard identification, The Water – Rest – Shade – Message, acclimatization, modified work schedules, training, monitoring for signs and symptoms and emergency planning and response.

Designate a Person to Oversee the Heat Stress Program

Identify someone trained in the hazards and physiological responses to heat and controls. This person can develop, implement and manage your Heat Stress Program.

Hazard Identification

This involves recognizing heat hazards and the risk of heat illness due to high temperature, humidity, sun and other thermal exposures, work demands, clothing or PPE and personal risk factors. Identification tools include: OSHA's Heat Index Phone App, a Wet Bulb Globe Thermometer (WBGT) which is a measure of heat stress in direct sunlight that takes into account the temperature, wind speed, sun, cloud cover; and the National Weather Service Heat Index. Exposure to full sun can increase heat index values up to 15°F.

WATER. REST. SHADE.

The work can't get done without them.

Ensure that cool drinking water is available and easily accessible. (Note: Certain beverages, such as caffeine and alcohol can lead to dehydration.)

Encourage workers to drink a liter of water over one hour, which is about one cup every fifteen minutes.

Provide or ensure that fully shaded or air-conditioned areas are available for resting and cooling down.

Drink water often

Rest in the shade

Report heat symptoms early

Know what to do in an emergency

Acclimatization

Acclimatization is a physical change that allows the body to build tolerance to working in the heat. It occurs by gradually increasing workloads and exposure and taking frequent breaks for water and rest in the shade. New workers and those returning from a prolonged absence should begin with 20% of the workload on the first day, increasing incrementally by no more than 20% each subsequent day.

During a rapid change leading to excessively hot weather or conditions such as a heat wave, even experienced workers should begin on the first day of work in excessive heat with 50% of the normal workload and time spent in the hot



environment, 60% on the second day, 80% on day three, and 100% on the fourth day.

Modified Work Schedules

Altering work schedules may reduce workers' exposure to heat. For instance:

- Reschedule all non-essential outdoor work for days with a reduced heat index.
- Schedule the more physically demanding work during the cooler times of day;
- Schedule less physically demanding work during warmer times of the day;
- Rotate workers and split shifts, and/or add extra workers.
- Work/Rest cycles, using established industry guidelines.
- Stop work if essential control methods are inadequate or unavailable when the risk of heat illness is very high.

Keep in mind that very early starting times may result in increased fatigue. Also, early morning hours can tend to have higher humidity levels.

Training

Provide training in a language and manner workers understand, including information on health effects of heat, the symptoms of heat illness, how and when to respond to symptoms, and how to prevent heat illness.

Monitoring for Heat Illness Symptoms

Establish a system to monitor and report the signs and symptoms listed on the previous page to improve early detection and action. Using a buddy system will assist supervisors when watching for signs of heat illness.

Emergency Planning and Response

Have an emergency plan in place and communicate it to supervisors and workers. Emergency plan considerations include:

- What to do when someone is showing signs of heat illness. This can make the difference between life and death.
- How to contact emergency help.
- How long it will take for emergency help to arrive and training workers on appropriate first-aid measures until help arrives.
- Consider seeking advice from a healthcare professional in preparing a plan.

Engineering Controls Specific to Indoor Workplaces

Indoor workplaces may be cooled by using air conditioning or increased ventilation, assuming that cooler air is available from the outside. Other methods to reduce indoor temperature include: providing reflective shields to redirect radiant heat, insulating hot surfaces, and decreasing water vapor pressure, e.g., by sealing steam leaks and keeping floors dry. The use of fans to increase the air speed over the worker will improve heat exchange between the skin surface and the air, unless the air temperature is higher than the skin temperature. However, increasing air speeds above 300 ft. per min. may actually have a warming effect. Industrial hygiene personnel can assess the degree of heat stress caused by the work environment and make recommendations for reducing heat exposure.

Additional information

For more information on this and other issues affecting workers or heat stress, visit:
www.osha.gov/heat
www.cdc.gov/niosh/topics/heatstress
and
www.noaa.gov/features/earthobs_0508/heat.html.



Heat Related Illness

Hot weather causes more fatalities than any other weather-related source. Heat waves rarely are given adequate attention but in fact, they claim more lives each year than floods, hurricanes, and tornadoes combined. Heat waves are a silent killer. Heatstroke also affects both genders equally. However, because many men were exposed to heat in the workforce, the annual death rate is 2 times higher in men than in women.

What is Heat Related Illness? When the human body is unable to maintain a normal temperature, heat illnesses can occur and may result in death.

In general, the human body cools itself by producing sweat. Sweat evaporating from the skin keeps the body cool. Higher humidity, limited air movement, and wearing protective equipment can reduce evaporation. Less evaporation means less cooling. Frequent intake of liquids is necessary to prevent dehydration through loss of sweat. Plenty of cool (50°F-60°F) water or other cool liquids (except beverages with alcohol or high caffeine levels) should be available. Drink small amounts frequently for example, one cup every 20 minutes.

Heat Stroke is the most serious heat-related health problem. Heat stroke occurs when the body's temperature regulating system fails and body temperature rises to critical levels (greater than 104°F).

This is a medical emergency that may result in death!

The signs of heat stroke are confusion, loss of consciousness, and seizures. Workers experiencing heat stroke have a very high body temperature and may stop sweating. If a worker shows signs of possible heat stroke, **get medical help immediately**, and call 911. Until medical help arrives, move the worker to a shady, cool area and remove as much clothing as possible. Wet the worker with cool water and circulate the air to speed cooling. Place cold wet cloths, wet towels or ice all over the body or soak the worker's clothing with cold water.

Heat Exhaustion is the next most serious heat-related health problem. The signs and symptoms of heat exhaustion are headache, nausea, dizziness, weakness, irritability, confusion, thirst, heavy sweating and a body temperature greater than 100.4°F. Workers with heat exhaustion should be removed from the hot area and given liquids to drink.

Cool the worker with cold compresses to the head, neck, and face or have the worker wash his or her head, face and neck with cold water. Encourage frequent sips of cool water. Workers with signs or symptoms of heat exhaustion should be taken to a clinic or emergency room for medical evaluation and treatment. Make sure that someone stays with the worker until help arrives. If symptoms worsen, call 911 and get help immediately.

Heat Cramps are muscle pains usually caused by the loss of body salts and fluid during sweating. Workers with heat cramps should replace fluid loss by drinking water and/or carbohydrate-electrolyte replacement liquids (e.g., sports drinks) every 15 to 20 minutes.

Heat Rash is the most common problem in hot work environments. Heat rash is caused by sweating and looks like a red cluster of pimples or small blisters. Heat rash may appear on the neck, upper chest, groin, under the breasts and elbow creases. The best treatment for heat rash is to provide a cooler, less humid work environment. The rash area should be kept dry. Powder may be applied to increase comfort. Ointments and creams should **not** be used on a heat rash. Anything that makes the skin warm or moist may make the rash worse.



The best way to treat heat related illness is to prevent it:

- Drink water early and often. The body loses water through perspiration, and you need to replace it frequently.
- Experts recommend that you **avoid** using **alcoholic beverages, coffee, tea or other beverages with caffeine as a fluid replacement**. These types of drinks cause you to lose even more water and salt. *The best defense is to drink plain water early and often.*
- Use fans to create air movement throughout your work area.
- When possible, take approved / frequent rest breaks. Immediately move to a cooler area if you feel dizzy or become nauseated. Report this to your foreman or supervisor. Keep an eye on your work partner.
- Dress in light colors. Choose fabrics that let moisture and heat escape. Dress in layers so you can peel off outerwear as needed as the day progresses.

Watch for signs of heat stress in yourself and your fellow workers. Most of the time, a construction worker may not realize what is happening to them until heat sickness strikes. If signs of heat illness do occur, help the victim to cool off by removing him to a cool place, fanning him or soaking him with cloth that has been dipped in cool water. Give him sips of water to drink **ONLY** if he is conscious.

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