

Preventing Heat Stress Illness

Workers who are exposed to extreme heat or work in hot environments may be at risk of heat stress. Heat stress occurs when your body is no longer able to control its internal temperature. Heat stress can lead to heat exhaustion and heat stroke. The latter of the two can be fatal.

Exposure to extreme heat can result in occupational illnesses and injuries. Here are some tips to aid in the prevention of heat-related illnesses.

- **Wear loose-fitting, lightweight clothing.** Wearing excess clothing or clothing that fits tightly won't allow your body to cool properly. Avoid wearing dark colors, black absorbs the most heat. A black object absorbs all wave-lengths of light and reflects none. Objects that are white, on the other hand, reflect all wavelengths of light and therefore absorb the least heat.
- **Protect against sunburn.** Sunburn affects your body's ability to cool itself, so protect yourself with sunscreen. The American Academy of Dermatology recommends a broad spectrum sunscreen with an SPF of at least 30. Apply sunscreen generously, and reapply every two hours — or more often if you're swimming or sweating. Wear a hat, and sunglasses with UV protection if working outside.
- **Drink plenty of fluids.** Encourage workers to drink about one cup of water every 15-20 minutes, even if they say they're not thirsty. During prolonged sweating lasting several hours, they should drink sports beverages containing electrolytes. Staying hydrated will help the body sweat and maintain a normal body temperature. Eating fruits and vegetables with high water content such as watermelon, oranges, strawberries, grapefruit, cucumbers, tomatoes can also help keep you hydrated. See page 2 for more information.
- **Take extra precautions with certain medications.** Be on the lookout for heat-related problems if you take certain medications that can affect your body's ability to stay hydrated and dissipate heat. Consult with your physician or pharmacist for recommendations.
- **Take it easy during the hottest parts of the day.** Avoid working and strenuous activity during the hottest parts of the day if possible. Try to schedule work, exercise or physical labor for cooler parts of the day, such as early morning or evening.
- **Get acclimated.** Allow time for your body to get adjusted to the hot weather and temperature. Limit time spent working or exercising in heat until your body is conditioned to it. People who are not used to hot weather are especially susceptible to heat-related illness.

Symptoms and First Aid for the Most Common Heat-related Illnesses

Extremely hot and humid weather challenges the body's ability to cool down; therefore, it is important to know the symptoms of excessive heat exposure and the appropriate treatment responses.

Below is a list of some warning signs and symptoms of the most common heat illnesses, and the recommended first aid steps from The Centers for Disease Control and Prevention.

Heat Cramps

Heat cramps usually affect workers who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels. Low salt levels in muscles causes painful cramps. Heat cramps may also be a symptom of heat exhaustion.

Symptoms:

- Painful muscle cramps and spasms usually in legs and abdomen

- Heavy sweating

First Aid:

- Apply firm pressure on cramping muscles or gently massage to relieve spasm.
- Give sips of water unless the person complains of nausea, then stop giving water

Heat Exhaustion

Heat exhaustion is the body's response to an excessive loss of water and salt, usually through excessive sweating. Workers most prone to heat exhaustion are those who are elderly, have high blood pressure, and those working in a hot environment.

Symptoms:

- Heavy sweating
- Weakness
- Cool, pale, clammy skin
- Fast, weak pulse
- Possible muscle cramps
- Dizziness
- Nausea or vomiting
- Fainting

First Aid:

- Move the person to a cooler environment
- Lay the person down and loosen clothing
- Apply cool, wet cloths to as much of the body as possible
- Fan or move the victim to an air-conditioned room
- Offer sips of water
- If person vomits more than once, seek immediate medical attention.



Heat Stroke

Heat stroke is the most serious heat-related illness. It occurs 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. When heat stroke occurs, the body temperature can rise to 106°F or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not given.

Symptoms:

- Altered mental state
- One or more of the following symptoms: throbbing headache, confusion, nausea, dizziness, shallow breathing, seizures
- Body temperature above 103°F
- Hot, red, dry or moist skin
- Rapid and strong pulse
- Faints, loses consciousness

First Aid:

- Call 911 for emergency medical care.
- Stay with worker until emergency medical services arrive.
- Move the worker to a shaded, cool area, and remove outer clothing.
- Cool the worker quickly with a cold water or ice bath if possible; wet the skin, place cold wet cloths on skin, or soak clothing with cool water.
- Circulate the air around the worker to speed cooling.
- Place cold wet cloths or ice on head, neck, armpits, and groin; or soak the clothing with cool water.

Dehydration Symptoms and Side Effects

How will you know if you're dehydrated? The first symptom is thirst. If you're thirsty, you're already dehydrated.

Symptoms of dehydration include:

- Dryness of the lips, mouth, or tongue
- Reduced energy or apathy
- Decreased or infrequent urination with small volume of urine or dark urine
- A sudden decline in mood, strength, coordination, or the ability to make decisions.

What Color Should Your Urine Be?

Your urine is a mix of water, electrolytes, and waste that your kidneys filter out from your blood.

When you're healthy and hydrated, your urine should fall somewhere between colorless and the color of light straw and honey. When you don't consume enough fluids, your urine becomes more concentrated and turns a darker yellow or amber color.

How to Hydrate

Replacing body fluids lost during sweating is the single most important way to control heat stress and keep you comfortable, productive, alert and safe.

The National Institute for Occupational Safety and Health (NIOSH) recommends fluid replacement not only as treatment for heat exhaustion, but as a preventive measure (i.e., water intake equal to the amount of sweat produced). OSHA identifies fluid replacement (drinking water) as one of its top 10 tips for staying cool in hot workplaces.

Hydration experts from NIOSH, ACGIH and OSHA recommend **drinking 5 to 7 ounces of fluids water every 15 to 20 minutes** -- not just during rest breaks -- to stay sufficiently hydrated and maintain a safe core body temperature. This puts less strain on the cardiovascular system and can lead to fewer heat-related illnesses and injuries.

Other tips for keeping workers hydrated and healthy:

- Drink at least 650 mL (3 cups) of water right after waking up.
- Drink before, during, and after physical labor to replace body fluid lost in sweating.
- Anticipate conditions that will increase the need for water, including high temperature, humidity, protective clothing, and difficulty of work.
- Keep in mind that by the time you are thirsty, you are already about 2 percent dehydrated. Once you are dehydrated, it's difficult to make up for that lost hydration.
- Drink 8 to 10 glasses of water each day.
- Employers should keep individual containers of cool, clean water within easy reach at all times. Prohibit communal drinking containers in workplace settings (COVID-19), and place coolers of water close enough to workers so they can reach it without abandoning the work area.
- Drink cool water, which is absorbed more quickly by the body than warm or very cold fluids. NIOSH and ACGIH recommend drinking water of **50 to 59 degrees**.
- Try carbohydrate/electrolyte drinks to help avoid heat cramps that can occur up to several hours after working. Sports drinks (Gatorade or Powerade) are good rehydration choices, but in moderation.
- Avoid coffee, tea or soda, which act as diuretics, further depleting the body of fluid. **Never drink alcohol while working.**

Symptoms That Require Emergency Care (even if only one symptom is present) Include:

- * Altered behavior, such as severe anxiety, confusion, or not being able to stay awake.
- * Faintness that is not relieved by lying down, or light headedness that continues after standing for 2 minutes.
- * Weak, rapid pulse. Cold, clammy skin or hot, dry skin.
- * Little or no urination.
- * Loss of consciousness.

