

Protecting Workers from the Effects of Heat

Every year, dozens of workers die and thousands more become ill due to heat exposure in the workplace. Hazardous heat exposure can occur indoors or outdoors and during any season, not only during heat waves. **Heat exposure may result in serious illness or even death, both of which are preventable.**

This fact sheet provides information on how to recognize and respond to symptoms of heat illness, the risk factors for heat illness, and methods to mitigate heat hazards in both indoor and outdoor workplaces.



What is Heat Illness?

As outdoor and indoor temperatures rise, a worker's core body temperature may also begin to rise. The body's natural way to regulate temperature is to increase its heart rate and sweat. This helps keep the body's core temperature from rising to unhealthy levels. Heat illness develops when these mechanisms are not enough to keep the core body temperature from rising.

Recognizing and Responding to Heat Illness

There are several types of heat illnesses. These illnesses are on a spectrum and conditions and symptoms can range from minor heat cramps to life-threatening heat stroke. Addressing symptoms early helps reduce the likelihood of a medical emergency. It is important to learn how to recognize symptoms and know how to respond to emergency situations. Workers should receive training on heat illness and recognizing heat illness symptoms, how to monitor themselves and each other, and what actions to take at the first sign of heat illness. **It is the employer's responsibility to ensure workers are safe from hazardous heat at work.**

Heat-Related Medical Emergencies Require Immediate Action

Addressing early signs of heat illness is critical to preventing medical emergencies. Heat illness can be fatal if not treated quickly. Act immediately if you recognize the symptoms below. The following are signs of a medical emergency:

If a worker experiences:

- Abnormal thinking or behavior
- Slurred speech
- Seizures
- Fainting
- Heavy sweating or hot, dry skin



Take these actions:

- Call 911 immediately.
- Cool the worker right away with water or ice.
- If possible, move the person to a cooler or shaded area. Stay with the worker until help arrives.



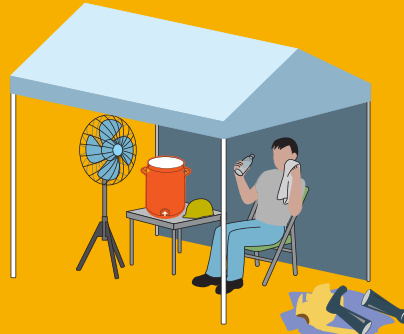
Risk Factors for Heat Illness

Watch for Signs of Heat Illness

The symptoms of heat illness will intensify with time if actions are not taken to hydrate, rest, and cool down. If not treated promptly, minor symptoms of heat illness could quickly lead to a life-or-death situation.

If a worker experiences:

- Headache or nausea
- Weakness or dizziness
- Elevated body temperature
- Thirst
- Decreased urine output



Take these actions:

- Give cool water to drink.
- Remove unnecessary clothing.
- Move to a cooler area.
- Cool with water, ice, or a fan.
- Do not leave alone.
- Seek medical care if needed.

Occupational Risk Factors

Occupational risk factors include both the work environment and the work you are doing. The temperature, humidity, length of time close to heat sources, and direct sunlight are all factors to pay attention to in the work environment. In addition, the physical exertion or workload required for your job, being unaccustomed to or not used to working in the heat, and the clothing or protective equipment you wear can contribute to your risk for heat illness.



Personal Risk Factors

Workers should pay attention to their lifestyle, habits, and body when working in the heat.

Medications:

such as antihistamines, diuretics, blood pressure medications, and others

Physical Characteristics:

older age, lower levels of physical fitness, pregnancy, acclimatization status, (i.e., if you have built tolerance to working in heat), and others

Health Conditions:

diabetes, obesity or overweight, high blood pressure, heart disease, and others



Behavioral Characteristics:

recent alcohol use, use of illicit drugs such as opioids, methamphetamine, and cocaine, a low intake of water, and others

12 Elements of a Heat Illness Prevention Program

A heat illness prevention program is an ongoing system that plans for and ensures workplace heat safety. Employers conduct routine workplace inspections to identify heat hazards, control the identified hazards, and monitor and evaluate the hazard controls to verify they are effective. Use the following elements in your heat illness prevention program.

Create a Plan and Provide Training



1. Have a Heat Plan

Develop a plan that includes monitoring, acclimatization, work/rest schedules, a buddy system, and protocols for emergencies and first aid. Communicate the plan to supervisors and workers.



2. Designate Someone to Oversee the Heat Safety Program

Identify someone trained or to-be-trained in heat hazards, heat illness symptoms, and heat controls. If possible, select or train multiple people to always have a designated Heat Safety Representative on-site. The Heat Safety Representative can develop, implement, and manage the program.



3. Provide Training on Heat Illness

Provide training on a regular basis (at least annually) for all workers on heat illness risks, symptoms, and response procedures, as well as prevention methods. Train workers in a language and format they understand.

Plan Work Schedules

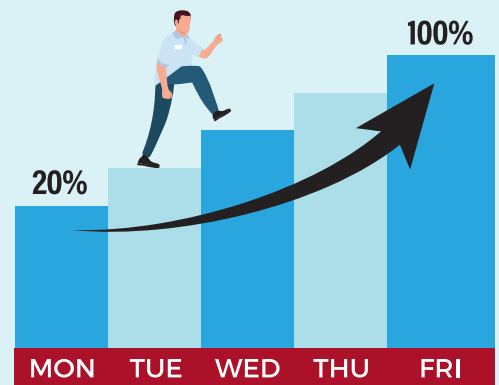
Nearly 3 out of 4 fatalities from heat illness occur in the first week of work.



4. Acclimatize Workers

Acclimatization is a physical change that allows the body to build tolerance to working in the heat. Acclimatize new and returning workers by gradually increasing workload and exposure by following the 20% Rule.

Allow new or returning workers to gradually increase duration of exposure and take more frequent breaks during the first week of work as they build a tolerance to working in the heat. Begin with a 20% exposure on the first day, increasing by no more than 20% each following day. Full acclimatization may take up to 14 days or longer.



5. Modify Work Schedules to Reduce Heat Exposure

There are several ways employers can modify schedules to address heat risks:

- Reschedule non-essential outdoor or indoor work for days with a reduced heat index.
- Shift physically demanding work to cooler times of the day.
- Rotate workers, add extra workers, or split shifts to reduce exposure to heat and ease workloads.
- Stop work if needed due to heat risk.

Employers should be aware that early morning start times may increase fatigue if schedules shift significantly. Monitor accordingly, as morning temperatures may also have higher humidity levels.



6. Allow Frequent Rest Breaks

Breaks should be long enough to allow workers enough time to recover from heat given the temperature, humidity, activity level, and other conditions.

Set Controls and Monitor On-Site Activity



7. Identify Heat Hazards

Hazard identification is 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. Use this [checklist](#) to identify potential sources of heat hazards.



8. Check the Temperature in the Space Before Work

Use apps and tools to track heat hazards.

- For outdoor work, use the OSHA-NIOSH Heat Safety Tool App ([Apple Store](#) or [Google Play](#)) to plan activities based on how hot it feels throughout the day. Consult the National Weather Service Heat Index and watch for high temperature weather alerts.
- For indoor work, use a combination thermometer and hygrometer to identify the heat index in the work area. Post signage of actions to take based on the work area's heat index.



9. Monitor for Heat Illness Symptoms

Establish a monitoring system for the signs and symptoms of heat illness. Also train workers to monitor each other. A buddy system can help supervisors watch for signs of heat illness.

More robust heat illness prevention programs establish a medical monitoring program. This should include medical evaluations before a worker starts (pre-placement) and periodic medical evaluations. The program should also include a plan for monitoring worker heat strain (e.g., core temperature, hydration, pulse, and/or blood pressure) on the job.



10. Designate a Break Area and Encourage Hydration

Remember: Water, Rest, Shade. Designate a shady or cool area for breaks and provide cool drinking water. Portable tents and shelters can be a solution for areas without natural shade. Ensure drinking water is available and accessible and encourage workers to drink 1 liter per hour (about 1 cup every 15 to 20 minutes). Remind workers to not drink more than 48 oz (1½ quarts) per hour! Drinking too much water or other fluids (sports drinks, energy drinks, etc.) can cause a medical emergency because the concentration of salt in the blood becomes too low.



11. Have Workers Dress for the Heat

Workers should wear a hat outside and loose-fitting, breathable clothing where possible.



12. Be prepared for an Emergency

Have an emergency plan in place for each worksite and communicate it to supervisors and workers.

This should include:

- What to do when someone is showing signs of heat illness.
- How to contact emergency services.
- How long it takes for emergency services to arrive.
- Appropriate first-aid measures until medical help arrives.

Personal Protective Equipment

In most cases, heat stress should be reduced by engineering controls or work practice modifications. However, in some limited situations, special cooling devices can protect workers in hot environments, such as reflective clothing or cooling vests.

Workers should be aware that use of certain personal protective equipment (e.g., certain types of respirators, impermeable clothing, and head coverings) can increase the risk of heat illness. Frequently communicate with these workers to ensure they are not experiencing symptoms of heat illness.

Controls Specific to Indoor Heat Stress

Indoor workers may also be exposed to heat hazards that could result in heat illnesses. For example, workers may be at risk if they work where there are indoor heat-generating appliances such as in bakeries, kitchens, and laundries, in manufacturing with heat sources such as furnaces. Other workers may conduct physical labor in a building that is not cooled properly or retains heat easily, such as the warehousing industry. Workplaces with indoor workspaces should include reducing indoor heat stress in their heat illness prevention program.

Reduce indoor heat stress with the following practices:

- Use air conditioning.
- Ventilate the space to bring in cooler air and create air flow.
- Redirect radiant heat with reflective shields.
- Insulate hot surfaces.
- Reduce humidity by sealing steam leaks and keeping floors dry.
- Use fans for personal cooling and to increase air circulation.





Additional Information

Workers have the right to working conditions that do not pose a risk of serious harm, to receive information and training about workplace hazards and how to prevent them, and to file a complaint with OSHA to inspect their workplace without fear of retaliation.

For more information about workers' rights, visit www.osha.gov/workers.

To file a complaint, visit www.osha.gov/workers/file-complaint or call 800-321-OSHA (6742).

For more information on this and other issues affecting workers or heat stress, visit:

www.osha.gov/heat | www.cdc.gov/niosh/topics/heatstress

(800) 321-OSHA (6742)



osha.gov/heat