



# Heat (Heat Wave)

Produced by the National Disaster Education Coalition: American Red Cross, FEMA, IAEM, IBHS, NFPA, NWS, USDA/CSREES, and USGS

## Why talk about extreme heat?

Heat can kill by pushing the human body beyond its limits. Under normal conditions, the body's internal thermostat produces perspiration that evaporates and cools the body. However, in extreme heat and high humidity, evaporation is slowed and the body must work extra hard to maintain a normal temperature. Elderly people, young children, and those who are sick or overweight are more likely to become victims of extreme heat.

Studies have shown that a significant rise in heat-related illnesses happens when excessive heat lasts more than two days.

Because men sweat more than women, they are more susceptible to heat illness because they become more quickly dehydrated.

The duration of excessive heat plays an important role in how people are affected by a heat wave. Studies have shown that a

significant rise in heat-related illnesses happens when excessive heat lasts more than two days. Spending at least two hours per day in air conditioning significantly cuts down on the number of heat-related illnesses.

## What is extreme heat?

The parameters of an extreme heat watch, warning, or advisory can vary by location. Generally, temperatures that hover 10 degrees or more above the average high temperature for the region, last for prolonged periods of time, and are often accompanied by high humidity, that the body cannot tolerate are defined as extreme heat. A heat wave is a very dangerous situation.

People living in urban areas may be at greater risk from the effects of a prolonged heat wave than people living in rural regions. An increased health problem, especially for those with respiratory difficulties, can occur when stagnant atmospheric conditions trap pollutants in urban areas, thus adding unhealthy air to excessively hot temperatures. In addition, asphalt

and concrete store heat longer and gradually releases heat at night, which produces significantly higher nighttime temperatures in urban areas known as the “urban heat island effect.”

Learn about the risk of extreme heat in your area by contacting your local emergency management office, National Weather Service office, or [American Red Cross chapter](#).

## Awareness Information

Know these terms:

- **Heat wave:** Prolonged period of excessive heat, often combined with excessive humidity. The [National Weather Service](#) steps up its procedures to alert the public during these periods when it anticipates an increase in human heat-related illnesses.
- **Heat index:** A number in degrees Fahrenheit (F) that tells how hot it really feels when relative humidity is added to the actual air temperature. Exposure to full sunshine can increase the heat index by 15°.
- **Heat cramps:** Heat cramps are muscular pains and spasms due to heavy exertion. Although heat cramps are the least severe, they are often the first signal that the body is having trouble with the heat.
- **Heat exhaustion:** Heat exhaustion typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to the vital organs. This results in a form of mild shock. If not treated, the victim’s condition will worsen. Body temperature will keep rising and the victim may suffer heat stroke.
- **Heat stroke:** Heat stroke is life-threatening. The victim’s temperature control system, which produces sweating to cool the body, stops working. The body temperature can rise so high that brain damage and death may result if the body is not cooled quickly.
- **Sunstroke:** Another term for heat stroke.

## Watch for Signals

- **Heat exhaustion:** Cool, moist, pale, or flushed skin; heavy sweating; headache; nausea or vomiting; dizziness; and exhaustion. Body temperature may be normal, or is likely to be rising.
- **Heat stroke:** Hot, red skin; changes in consciousness; rapid, weak pulse; and rapid, shallow breathing. Body temperature can be very high — sometimes as high as 105°F. If the person was sweating from heavy work or exercise, skin may be wet; otherwise, it will feel dry.

## How to Treat a Heat Emergency

- **Heat stroke:** Heat stroke is a life-threatening situation. Help is needed fast. Call 9-1-1 or your local emergency number. Move the person to a cooler place. Quickly cool the body. Immerse victim in a cool bath, or wrap wet sheets around the body and fan it. Watch for signals of breathing problems. Keep the person lying down and continue to cool the body any way you can. If the victim refuses water, is vomiting, or there are changes in the level of consciousness, do not give anything to eat or drink.
- **Heat cramps:** Get the person to a cooler place and have him or her rest in a comfortable position. Lightly stretch the affected muscle and replenish fluids. Give a half glass of cool water every 15 minutes. Do not give liquids with alcohol or caffeine in them, as they can cause further dehydration, making conditions worse.
- **Heat exhaustion:** Get the person out of the heat and into a cooler place. Remove or loosen tight clothing and apply cool, wet cloths, such as towels or sheets. If the person is conscious, give cool water to drink. Make sure the person drinks slowly. Give a half glass of cool water every 15 minutes. Let the victim rest in a comfortable position, and watch carefully for changes in his or her condition.

## Plan for Extreme Heat

Develop a Family Disaster Plan. Please see the **“Family Disaster Plan”** section for general family planning information. Revisit your family disaster plan before summer heat is expected. Extreme heat-specific planning should include the following:

- Learn what heat hazards may occur where you are and learn how to plan for extreme heat should it occur in your area. Different areas have different risks associated with prolonged heat. Contact your local emergency management office, National Weather Service office, or American Red Cross chapter for information.

If you are at risk from extreme heat:

- If your home does not have air conditioning, choose other places you go to get relief from the heat during the warmest part of the day. Schools, libraries, theaters and other community facilities often provide air-conditioned refuge on the hottest days. Air conditioning provides the safest escape from extreme heat. During the 1995 Midwest heat wave, most deaths happened to people not in air conditioned locations.
- Plan changes in your daily activities to avoid strenuous work during the warmest part of the day. Ill effects of heat can quickly overcome the healthiest people, if they perform strenuous work during

the warmest parts of the day. Symptoms of dehydration are not easily recognized and are often confused with other causes. Dehydration occurs fast and makes you ill very quickly.

- Some family members may be taking medications or have medical conditions that may cause poor blood circulation or reduced ability to tolerate heat. Discuss these concerns with a physician. A physician can advise you about changes to medication or other activities you can do to temporarily relieve the effects of heat.
- Plan to check on family, friends, and neighbors who do not have air conditioning or who spend much of their time alone. Elderly persons who live alone or with a working relative might need assistance on hot days. The majority of deaths during the 1995 Midwest heat wave were persons who were alone.
- Plan to wear lightweight, light-colored clothing. Light colors will reflect away the sun's rays more than dark colors, which absorb the sun's rays.
- Get training. Take an American Red Cross first aid course to learn how

### **Assemble a Disaster Supplies Kit**

Please see the "Disaster Supplies Kit" section for general supplies kit information. Extreme heat-specific supplies should include the following:

- Additional water.
- Disaster Supplies Kit basics.

to treat heat emergencies and other emergencies. Everyone should know how to respond, because the effects of heat can happen very quickly.

- Discuss extreme heat wave with your family. Everyone should know what to do in the places where they spend time. Some places may not be air conditioned or safe during a heat wave, so plan alternatives. Discussing extreme heat ahead

of time will help reduce fear and anxiety, and lets everyone know how to respond.

### **Protect Your Property**

- Install window air conditioners snugly. Insulate spaces around air conditioners for a tighter fit. An air conditioner with a tight fit around the windows or wall openings will make less noise and allow less hot air in from the outside.
- Make sure your home is properly insulated. This will help you to conserve electricity and reduce your home's power demands for air conditioning. Weather-strip doors and windowsills to keep cool air inside, allowing the inside temperature to stay cooler longer.
- During a drought, conserve water by placing a brick, or another large solid object, in your toilet tank to reduce the amount of water used in flushing.
- Consider keeping storm windows installed throughout the year.

Storm windows can keep the heat out of a house in the summer the same way they keep the cold out in the winter.

- Check air-conditioning ducts for proper insulation. Insulation around ducts prevents cool air from leaking and keeps it directed through the vents.
- Protect windows. Hang shades, draperies, awnings, or louvers on windows that receive morning or afternoon sun. Outdoor awnings or louvers can reduce the heat entering the house by as much as 80 percent.
- Use attic fans. If you have a fan installed to vent warm air out of your attic, use the fan to help keep your home cool.

### Media and Community Education Ideas

- Publish a special newspaper section with emergency information on extreme heat. Localize the information by including the phone numbers of local emergency services offices, the American Red Cross chapter, and local hospitals.
- Interview local physicians about the dangers of sunburn, heat exhaustion, heat stroke, and other possible conditions caused by excessive heat.
- During a drought, run a series of programs suggesting ways that individuals can conserve water and energy in their homes and their workplaces.
- Interview local officials and representatives of the **U.S. Department of Agriculture** about special steps farmers can take to establish alternative water supplies for their crops and ways to protect livestock and poultry from the effects of extreme heat.
- Sponsor a “Helping Your Neighbors” program through your local school system to encourage children to think of those persons who require special assistance during severe weather conditions, such as elderly people, infants, or people with disabilities.
- Arrange for air-conditioned shelters to be opened when necessary for community members who do not have air conditioning at home.
- Arrange for special programs to provide air conditioners to vulnerable people in their homes.

### What to Do During Extreme Heat

- Slow down. Avoid strenuous activity. Reduce, eliminate or reschedule strenuous activities. High-risk individuals should stay in cool places. Get plenty of rest to allow your natural “cooling system” to work. If you must do strenuous activity, do it during the coolest part of the day,

which is usually in the morning between 4:00 a.m. and 7:00 a.m. Many heat emergencies are experienced by people exercising or working during the hottest part of the day.

- Avoid too much sunshine. Sunburn slows the skin's ability to cool itself. The sun will also heat the inner core of your body, resulting in dehydration. Use a sunscreen lotion with a high sun protection factor (SPF) rating.
- Postpone outdoor games and activities. Extreme heat can threaten the health of athletes, staff, and spectators of outdoor games and activities.
- Avoid extreme temperature changes. A cool shower immediately after coming in from hot temperatures can result in hypothermia, particularly for elderly and very young people.
- Stay indoors as much as possible. If air conditioning is not available, stay on the lowest floor, out of the sunshine. Even in the warmest weather, staying indoors, out of sunshine, is safer than long periods of exposure to the sun.
- Keep heat outside and cool air inside. Close any registers that may allow heat inside. Install temporary reflectors, such as aluminum foil covered cardboard, in windows and skylights to reflect heat back outside.
- Conserve electricity not needed to keep you cool. During periods of extreme heat, people tend to use a lot more power for air conditioning. Conserve electricity not used to keep you cool so power can remain available and reduce the chance of a community wide outage.
- Vacuum air conditioner filters weekly during periods of high use. Air conditioner filters can become clogged or filled with dirt, making them less efficient. Keeping them clean will allow your air conditioner to provide more cool air.
- If your home does not have air conditioning, go to a public building with air conditioning each day for several hours. Air conditioned locations are the safest places during extreme heat because electric fans do not cool the air. Fans do help sweat evaporate, which gives a cooling effect.
- Dress appropriately:
  - Wear loose-fitting, lightweight, light-colored clothing that will cover as much skin as possible. Lightweight, light-colored clothing reflects heat and sunlight and helps maintain normal body temperature. Cover as much skin as possible to avoid sunburn and overwarming effects of sunlight on your body.

- Protect face and head by wearing a wide-brimmed hat. A hat will keep direct sunlight off your head and face. Sunlight can burn and warm the inner core of your body.
- Drink plenty of fluids even if you do not feel thirsty. Injury and death can occur from dehydration, which can happen quickly and unnoticed. Symptoms of dehydration are often confused with other causes. Persons who have epilepsy or heart, kidney, or liver disease; who are on fluid-restrictive diets; or who have a problem with fluid retention should consult a doctor before increasing liquid intake.
- Take frequent breaks if you must work outdoors. Frequent breaks, especially in a cool area or to drink fluids, can help people tolerate heat better.
- Use a buddy system when working in extreme heat. Partners can keep an eye on each other and can assist each other when needed. Sometimes exposure to heat can cloud judgment. Chances are if you work alone, you may not notice this.
- Drink plenty of water regularly and often. Your body needs water to keep cool. Water is the safest liquid to drink during heat emergencies.
- Avoid drinks with alcohol or caffeine in them. They can make you feel good briefly, but make the heat's effects on your body worse. This is especially true about beer, which actually dehydrates the body.
- Eat small meals and eat more often. Large, heavy meals are more difficult to digest and cause your body to increase internal heat to aid digestion, worsening overall conditions. Avoid foods that are high in protein, such as meats and nuts, which increase metabolic heat.
- Avoid using salt tablets unless directed to do so by a physician. Salt causes the body to retain fluids, resulting in swelling. Salt affects areas of your body that help you sweat, which would keep you cool. Persons on salt-restrictive diets should check with a physician before increasing salt intake.
- NEVER leave children or pets alone in closed vehicles. Temperatures inside a closed vehicle can reach over 140°F within minutes. Exposure to such high temperatures can kill in minutes.