



THE LATEST FROM THE NAVAL SAFETY CENTER

## Special Issue About Heat and Heat Stress

Periods of extremely hot weather -- heat waves -- can cause serious health problems. Among weather-related events, heat waves are a leading cause of death. Residents of Illinois experienced this in July 1995, when extreme heat contributed to the deaths of more than 700 people in the Chicago area. Here are some commonly asked questions about hot weather and heat-related illnesses, along with suggestions about how to cope with these conditions.

### HEAT INDEX

The heat index (HI) measures what hot weather "feels like." It is determined by the air temperature and the relative humidity. The National Weather Service issues a "heat advisory" when the HI is expected to reach 105 degrees F during any 24-hour period and the minimum HI during that period remains 75 degrees F or higher. A "heat warning" is issued when the HI is expected to reach or exceed 115 degrees F on at least two consecutive days, and the minimum HI during the period remains 80 degrees F or higher. The National Weather Service cautions that it is important to remember that HI values are devised for shady, light wind conditions. Exposure to full sunshine can increase these values by up to 15 degrees F. Strong winds - particularly with very hot, dry air - can be extremely hazardous.

### AFFECTS OF HIGH TEMPERATURE

Normally, the body cools itself by sweating. If temperatures are extremely high, however, sweating is not enough to maintain the body's normal temperature. When this happens, blood chemistry can change and internal organs - including the brain and kidneys - can be damaged. Heat also can be stressful if the temperature changes suddenly, since it usually takes several days for the body to adjust to heat.

### COMMON HEAT-RELATED CONDITIONS

The most common heat-related conditions are heatstroke, heat exhaustion, heat cramps, sunburn and heat rash. Heatstroke and heat exhaustion are the most serious.

Heatstroke 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. Body temperature may rise to 106 degrees F or higher within 10 to 15 minutes. Heatstroke can result from overexposure to direct sunlight, with or without physical activity, or to very high indoor temperatures. It can cause death or permanent disability if emergency treatment is not given.

Symptoms of heatstroke include an extremely high body temperature (above 103 degrees F, orally); red, hot and dry skin; rapid pulse; throbbing headache; dizziness; nausea; confusion; and unconsciousness.

Treatment: If symptoms of heatstroke are present, find a cool place, preferably an air-conditioned indoor setting. Outside, find a spot in the shade. Put the victim in a semi-sitting position. Loosen his or her clothing and bathe the head and body with cold water. Seek medical attention immediately.

Heat exhaustion can result when too much time is spent in a very warm environment, resulting in excessive sweating without adequate fluid and electrolyte (salt and minerals) replacement. This can occur either indoors or outdoors, with or without exercise.

Symptoms of heat exhaustion include dizziness, headache, nausea, abdominal cramps, shallow breathing, cool and clammy skin, muscle tremors and heavy perspiration.

Treatment: A person suffering from heat exhaustion should be moved to an air-conditioned environment if possible. If outside, move the person to a shady spot. Loosen the person's clothing and encourage him or her to drink cool, non- alcoholic, decaffeinated beverages. Keep the person quiet. It may be necessary to seek medical attention if symptoms worsen or last longer than one hour or if the person has heart problems or high blood pressure. If left untreated, heat exhaustion may progress to heatstroke.

## **AVOIDING HEAT EXHAUSTION AND HEAT STROKE**

Try to keep cool during extremely hot weather. Stay in a cool environment (preferably air-conditioned), drink plenty of fluids (such as water, fruit juices or fruit drinks) and use common sense. Heat injury may develop with or without feelings of discomfort.

### **NO AIR CONDITIONER?**

Seek out the nearest facility that is air-conditioned, such as a cooling shelter, a senior-citizen center, a church, the local YMCA or a center designated by your community. Even short periods of time in a cool environment will lessen the risk of heat injury. Fans alone will not effectively cool an overheated person when air temperatures are above 90 degrees F.

### **FLUID INTAKE**

"Plenty of fluids" means at least 1½ to 2 quarts of fluids daily. This can be water, fruit juice, or fruit-flavored or carbonated drinks. Since aging can cause a decreased thirst sensation, elderly persons should drink water, fruit juices or other fruit drinks at regular intervals during the day, even if they do not feel thirsty. Avoid alcoholic beverages and those containing caffeine. Salt tablets are not substitutes for fluids.

### **PERSONS MOST AT RISK FOR HEAT-RELATED PROBLEMS**

Anyone can develop heat-related problems if ventilation is not adequate or if the person is overexposed to direct sunlight. However, certain groups of people are at increased risk during extremely hot weather: elderly persons living alone, people with chronic medical conditions, and persons taking certain medications.

### **AT-RISK MEDICATIONS**

A number of different medications can pose special problems during periods of extremely hot weather. These include diuretics (water pills), many heart medicines, diabetes medicine (tablets and insulin), psychoactive drugs (antidepressants and mood altering drugs), antihistamines (hay fever and allergy medicine) and antihypertensive (high blood pressure) drugs. Do not change or discontinue prescribed medications without advice from your physician.

## **CHILDREN AND THE HEAT**

Young children, particularly infants, are extremely sensitive to heat and can easily become dehydrated (lose more body fluids than usual) from high air temperatures. To help avoid dehydration during extremely hot weather, adults should make sure children drink plenty of fluids. Keep young children out of direct sunlight.

## **HOW TO AVOID HEAT-RELATED PROBLEMS**

Use the buddy system. If you are working in the heat, check on coworkers and have someone else do the same for you. If you are at home and are 65 years of age or older or have a chronic health problem, ask a friend, relative or neighbor check on you at least twice a day, even if you have air conditioning. If you know someone who is 65 years of age or older or who has a chronic health problem, check on them at least twice a day.

Plan outdoor activities for the coolest times of the day – before noon and in the evening. When physically active, rest frequently in the shade.

During hot weather, you will need to drink more liquid than your thirst indicates. Even if you remain indoors and limit your activity, your body still needs to replace lost fluids, salt and minerals. Make an extra effort to drink a minimum of six to eight 8 oz. glasses of cool fluids daily. During heavy exercise in a hot environment, drink two to four glasses of cool fluids each hour. Parents should be sure young children get sufficient fluids. If you are on a special fluid-restricted diet or if you take diuretics, ask your physician about fluid intake during hot weather.

Wear as little clothing as possible when indoors, and wear light-colored, loose-fitting clothing outdoors. When spending time outdoors, avoid direct sunlight, wear a hat and use a sunscreen with a sun protection factor (SPF) greater than 15 to protect yourself against sunburn.

Never leave children, the elderly or pets in a parked car, not even for just a few minutes. The air temperature inside a car rises rapidly during hot weather and can lead to brain damage or death.

In many ways, dogs and cats react to hot weather as humans do. Offer pets extra water and be sure to place the water dish in a shaded area if outdoors. Make sure pets have a protected place where they can get away from the sun.

## **FOR MORE INFORMATION**

<https://www.osha.gov/Publications/osha3154.pdf>

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