

US EPA ARCHIVE DOCUMENT



"It's Too Darn Hot" – **Planning for Excessive Heat Events**

Information for Older Adults and Family Caregivers

During an average summer, about 1,500 people die from excessive heat events in the United States.¹ In 1995, a heat wave in Chicago killed more than 700 people. The summer of 2003 in Europe, a record heat wave killed about 35,000 people. In both cases, most of the victims were older adults.

Did you know that each year in the United States more people die from excessive heat than from hurricanes, lightning, tornadoes, earthquakes, and floods combined? ²

"An excessive heat event," or "heat wave" occurs when the summer heat is 10 degrees higher than the average high temperature for a region.³ For example, 95-degree weather over several days in an area that averages 85 degrees would be an excessive heat event, or heat wave. This heat is unpleasant. It is also especially dangerous for older people. The longer high temperatures last, the more dangerous the heat becomes.

Where Are Heat Waves Most Dangerous?

Heat waves can be dangerous anywhere, but especially in cities. Streets and buildings take in and keep the heat. This

creates "heat islands" that are hotter than areas outside of the city and don't cool off at night. In areas with fewer people, more trees and fewer streets and buildings help things cool down overnight.

How Does the Body Cool Itself?

Sweating, or perspiration helps to cool the body. However, under some conditions, perspiration just isn't enough and people stay hot. This can cause a person's body temperature to rise rapidly. When this happens, the very high temperatures can damage the brain or other vital organs.

High humidity, when the air is full of water, makes it harder to sweat and cool the body. Drinking alcohol or working or playing outside during the heat can also make it hard for the body to cool down.

Electric fans help to move the air, but they do not cool off the body when the temperature is in the high 90s.

What Can Be Done to Help the Body Cool Off?

Prevention is the best medicine. The best way to avoid heat-related problems is to not get overheated.

- **Air conditioning is the best defense.**⁴ Spending time in air conditioned location, (even a few hours); during the hottest times of the day can be very helpful. If you don't have air-conditioning in your home, visit family or friends who do. Go to the library, a movie theater, a senior center, or a shopping mall. Check to see if your town has a "cooling center" which is a building with air conditioning where people can gather during a heat wave.
- Take a cool shower or bath.⁵
- Drink lots of fluids, and don't wait until you feel thirsty. Drink regularly throughout the day and night.

Who is Likely to Suffer Most During a Heat Wave?

- **Older Adults:** As people get older, the body's ability to cool itself may not work as well as it used to.
- **People with Health Problems:** People who are sick are at greater risk of extreme heat. Some medicines may make it harder for the body to cool

off. Being overweight also makes it harder for the body to cool off.

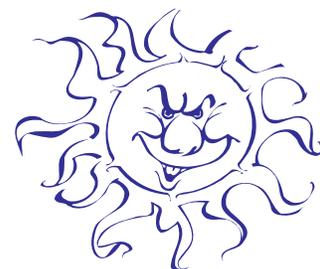
- **Live on Top Floors:** People who live on the top floors of buildings are more at risk because heat rises and it is often warmer there than on lower floors.
- **No Air-conditioning:** People who do not have air conditioning are also likely to experience problems during heat events.
- **Bed Ridden:** People who are not able to get out of the house and go to places where it is cooler are also at risk.

What Happens When the Body Fails to Cool Down?

When the skin cannot cool down, body temperatures can quickly get too hot. This can cause a health problem called "heat stroke." Important organs like the brain can overheat and be damaged permanently. In some cases, this can lead to life-long disability or death.

Warning signs of being overheated should be taken very seriously. These signs include:

- Red, hot, dry skin (lack of perspiration)
- Confusion
- Hallucinations (seeing, hearing, or smelling things that aren't there)



How Can I Keep Cool?

- If your health care provider asks you to limit the amount of fluids you drink, ask how much is safe to drink when it is hot. Be sure to find out an exact amount, such as "one 12-ounce glass" and how often.
- Avoid beverages that contain caffeine, alcohol, or large amounts of sugar. These drinks can overheat or dehydrate you. Ask your health care provider if your medicines might dehydrate you. If so, find out what to do about it. Do not stop taking your medicine unless your doctor or nurse says it is ok.
- If you live alone, be sure someone checks on you at least twice a day during a heat wave. Ask a friend or your caregiver to check for signs of heat-related symptoms, such as hot, dry skin, confusion, or hallucinations.
- Call 911 if you need help or medical attention.

What are Heat Alert Systems?

Local governments can develop heat alert systems and help protect the public from heat-related problems.

Something called a "Heat Health Watch Warning System" lets the public know when a heat wave is coming. Local health officials then get this warning out to older adults and their caregivers and to others who might suffer during a heat wave. These systems have been set up in cities around the country, including in Philadelphia, Seattle, Chicago, and St. Louis.

Find out if your area has a Warning System and how you can get more information.

Local governments also provide other assistance. They can...

- Let the media know about a coming heat wave so it will be reported in the news.
- Set up telephone information lines to answer questions about protection and signs of illness.
- Tell people how to help an older family member or neighbor during a heat wave.
- Make air-conditioned buildings available and provide a way to get there.
- Make sure that homeless people can find cool spaces.
- Make educational materials available to agencies, senior centers, places of worship, and supermarkets.
- Work with utilities to ensure no one's electricity is turned off during a heat wave.

What is EPA's Aging Initiative?

To help older adults enjoy a longer and healthier life and protect their loved ones, the EPA developed a program called the Aging Initiative. It helps with research, develops plans that cities can use to prevent sickness during heat waves, and sponsors public education about things in the environment that can affect health. For more information, visit the EPA's Web site at www.epa.gov/aging.



How Can Communities Help Cool the Air?

Communities can require the use of construction materials that do not absorb heat. When possible, they can build roads and sidewalks using light-colored material that does not hold heat. In addition, they can start programs to plant more trees and bushes. Each of these steps helps to:

- Lower the air temperature
- Reduce air pollution
- Decrease energy consumption
- Improve everyone's comfort

Other References

Environmental Protection Agency,
Heat Island Reduction Initiative
<http://www.epa.gov/heatisland>

Centers for Disease Control and Prevention
<http://www.cdc.gov/aging/>
<http://www.cdc.gov/nceh/hsb/extremeheat>
<http://www.cdc.gov/MMWR>

Environmental Health Perspectives
<http://www.ehp.niehs.nih.gov>

National Weather Service,
Heat Wave and Heat Index
<http://www.nws.noaa.gov/pa/secnews/heat/>

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<http://www.nws.noaa.gov/om/hazstats.shtml>

American Medical Association,
Heat-Related Illness During Extreme
Emergencies
<http://www.ama-assn.org>

Heat Wave Awareness Project
<http://www.esig.ucar.edu/heat/literate.html>

Medline Plus,
Heat Illness
[http://www.niapublications.org/
spnages/hyperthermia-sp.asp](http://www.niapublications.org/spnages/hyperthermia-sp.asp)

Footnotes

1. Kalkstein, L.S. and J.S. Greene, 1997. An Evaluation of Climate/Mortality Relationships in Large U.S. Cities and the Possible Impact of a Climate Change. *Environmental Health Perspectives*, 105(1):84-93.
2. Centers for Disease Control and Prevention, 2003. Extreme Heat. Available online: <http://www.cdc.gov/nceh/hsb/extremeheat/default.htm>
3. Federal Emergency Management Administration, Backgrounder on Extreme Heat, Feb. 2003
4. Naughton MP, Henderson A, Mirabelli MC, Kaiser R, Wilhelm JL, Kieszak SM, Rubin CH, McGeehin MA. Heat-related mortality during a 1999 heat wave in Chicago. *Am J Prev Med.* 2002 May;22(4):328-9.
5. McMichael, A.J., L.S. Kalkstein and other lead authors, 1996. Climate Change and Human Health, (eds. A.J. McMichael, A. Haines, R. Slooff, S. Kovats). World Health Organization, and United Nations Environment Programme (Who/WMO/ UNEP), Geneva, 297 pp.

