A Prevention Guide to Promote Your Personal Health and Safety
For more information on hot weather conditions and health, please contact:
Centers for Disease Control and Prevention
National Center for Environmental Health, MS F52
4700 Buford Hwy, Atlanta, GA 30341-3717
1-888-232-6789; EHHEinq@cdc.gov
http://www.bt.cdc.gov/disasters/extremeheat/

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When winter temperatures drop significantly below normal, staying warm and safe can become a challenge. Extremely cold temperatures often accompany a winter storm, so you may have to cope with power failures and icy roads. Although staying indoors as much as possible can help reduce the risk of car crashes and falls on the ice, you may also face indoor hazards. Many homes will be too cold—either due to a power failure or because the heating system isn’t adequate for the weather. When people must use space heaters and fireplaces to stay warm, the risk of household fires increases, as well as the risk of carbon monoxide poisoning.

Exposure to cold temperatures, whether indoors or outside, can cause other serious or life-threatening health problems. Infants and the elderly are particularly at risk, but anyone can be affected. To keep yourself and your family safe, you should know how to prevent cold-related health problems and what to do if a cold-weather health emergency arises.

The emergency procedures outlined here are not a substitute for training in first aid. However, these procedures will help you to know when to seek medical care and what to do until help becomes available.

What Is Extreme Cold?
What constitutes extreme cold and its effects can vary across different areas of the country. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered “extreme cold.” Whenever temperatures drop decidedly below normal and as wind speed increases, heat can leave your body more rapidly. These weather-related conditions may lead to serious health problems.

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Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a “dome” of high atmospheric pressure traps hazy, damp air near the ground. Excessively dry and hot conditions can provoke dust storms and low visibility. Droughts occur when a long period passes without substantial rainfall. A heat wave combined with a drought is a very dangerous situation.

During Hot Weather

To protect your health when temperatures are extremely high, remember to keep cool and use common sense. The following tips are important:

1. Drink Plenty of Fluids
   - During hot weather you will need to increase your fluid intake, regardless of your activity level. Don’t wait until you’re thirsty to drink. During heavy exercise in a hot environment, drink two to four glasses (16–32 ounces) of cool fluids each hour.
   - Warning: If your doctor generally limits the amount of fluid you drink or has you on water pills, ask how much you should drink while the weather is hot. Don’t drink liquids that contain caffeine, alcohol, or large amounts of sugar—these actually cause you to lose more body fluid. Also avoid very cold drinks, because they can cause stomach cramps.

2. Plan Ahead
   - Prepare for extremely cold weather every winter—it’s always a possibility. There are steps you can take in advance for greater wintertime safety in your home and in your car.

Winter Survival Kit for Your Home

Keep several days’ supply of the following items:

- Food that needs no cooking or refrigeration, such as bread, crackers, cereal, canned foods, and dried fruits. Remember baby food and formulas if you have young children.
- Water stored in clean containers, or purchased bottled water (5 gallons per person) in case your water pipes freeze and rupture.
- Medicines that any family member may need.

If your area is prone to long periods of cold temperatures, or if your home is isolated, stock additional amounts of food, water, and medicine.

Emergency Supplies List:

- An alternate way to heat your home during a power failure: dry wood firewood for a fireplace or wood stove, or kerosene for a kerosene heater
- Furnace fuel (coal, propane, or oil)
- Electric space heater with automatic shut-off switch and non-glowing elements
- Blankets
- Matches
- Multipurpose, dry-chemical fire extinguisher
- First aid kit and instruction manual
- Flashlight or battery-powered lantern
- Battery-powered radio
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Replace Salt and Minerals

Heavy sweating removes salt and minerals from the body. These are necessary for your body and must be replaced. If you must exercise, drink two to four glasses of cool, non-alcoholic fluids each hour. A sports beverage can replace the salt and minerals you lose in sweat. However, if you are on a low-salt diet, talk with your doctor before drinking a sports beverage or taking salt tablets.

Wear Appropriate Clothing and Sunscreen

Wear as little clothing as possible when you are at home. Choose lightweight, light-colored, loose-fitting clothing. Sunburn affects your body's ability to cool itself and causes a loss of body fluids. It also causes pain and damages the skin. If you must go outdoors, protect yourself from the sun by wearing a wide-brimmed hat (also keeps you cooler) along with sunglasses, and by putting on sunscreen of SPF 15 or higher (the most effective products say "broad spectrum" or "UV A/UVB protection" on their labels) 30 minutes prior to going out. Continue to reapply it according to the package directions.

Schedule Outdoor Activities Carefully

If you must be outdoors, try to limit your outdoor activity to morning and evening hours. Try to rest often in shady areas so that your body's thermostat will have a chance to recover.

Pace Yourself

If you are not accustomed to working or exercising in a hot environment, start slowly and pick up the pace gradually. If exertion in the heat makes your heart pound and leaves you gasping for breath, STOP all activity. Get into a cool area or at least into the shade, and rest, especially if you become lightheaded, confused, weak, or faint.

Prepare Your Home for Winter

Although periods of extreme cold cannot always be predicted far in advance, weather forecasts can sometimes provide you with several days’ notice. Listen to weather forecasts regularly, and check your emergency supplies whenever a period of extreme cold is predicted.

If you plan to use a fireplace or wood stove for emergency heating, have your chimney or flue inspected each year. Ask your local fire department to recommend an inspector, or find one in the yellow pages of your telephone directory under “chimney cleaning.”

Also, if you’ll be using a fireplace, wood stove, or kerosene heater, install a smoke detector and a battery-operated carbon monoxide detector near the area to be heated. Test them monthly, and replace batteries twice yearly.

Your ability to feel a change in temperature decreases with age, and older people are more susceptible to health problems caused by cold. If you are over 65 years old, place an easy-to-read thermometer in an indoor location where you will see it frequently, and check the temperature of your home often during the winter months.

Insulate any water lines that run along exterior walls so your water supply will be less likely to freeze. To the extent possible, weatherproof your home by adding weather-stripping, insulated doors and storm windows, or thermal-pane windows.

If you have pets, bring them indoors. If you cannot bring them inside, provide adequate shelter to keep them warm and make sure that they have access to unfrozen water.
Stay Cool Indoors

Stay indoors and, if at all possible, stay in an air-conditioned place. If your home does not have air conditioning, go to the shopping mall or public library—even a few hours spent in air conditioning can help your body stay cooler when you go back into the heat. Call your local health department to see if there are any heat-relief shelters in your area. Electric fans may provide comfort, but when the temperature is in the high 90s, fans will not prevent heat-related illness. Taking a cool shower or bath or moving to an air-conditioned place is a much better way to cool off. Use your stove and oven less to maintain a cooler temperature in your home.

Use a Buddy System

When working in the heat, monitor the condition of your co-workers and have someone do the same for you. Heat-induced illness can cause a person to become confused or lose consciousness. If you are 65 years of age or older, have a friend or relative call to check on you twice a day during a heat wave. If you know someone in this age group, check on them at least twice a day.

Monitor Those at High Risk

Although any one at any time can suffer from heat-related illness, some people are at greater risk than others.

• Infants and children up to four years of age are sensitive to the effects of high temperatures and rely on others to regulate their environments and provide adequate liquids.

• People 65 years of age or older may not compensate for heat stress efficiently and are less likely to sense and respond to change in temperature.

• People who are overweight may be prone to heat sickness because of their tendency to retain more body heat.

• People who overexert during work or exercise may become dehydrated and susceptible to heat sickness.

• People who are physically ill, especially with heart disease or high blood pressure, or who take certain medications, such as for depression, insomnia, or poor circulation, may be affected by extreme heat.

Visit adults at risk at least twice a day and closely watch them for signs of heat exhaustion or heat stroke. Infants and young children, of course, need much more frequent watching.

Prepare Your Car for Winter

You can avoid many dangerous winter travel problems by planning ahead. Have maintenance service on your vehicle as often as the manufacturer recommends. In addition, every fall:

• Have the radiator system serviced, or check the antifreeze level yourself with an antifreeze tester. Add antifreeze, as needed.

• Replace windshield-wiper fluid with a wintertime mixture.

• Replace any worn tires, and check the air pressure in the tires.

During winter, keep the gas tank near full to help avoid ice in the tank and fuel lines.
Adjust to the Environment

Be aware that any sudden change in temperature, such as an early summer heat wave, will be stressful to your body. You will have a greater tolerance for heat if you limit your physical activity until you become accustomed to the heat. If you travel to a hotter climate, allow several days to become acclimated before attempting any vigorous exercise, and work up to it gradually.

Use Common Sense

Remember to keep cool and use common sense:
• Avoid hot foods and heavy meals—they add heat to your body.
• Drink plenty of fluids and replace salts and minerals in your body.
• Dress infants and children in cool, loose clothing and shade their heads and faces with hats or an umbrella.
• Limit sun exposure during mid-day hours and in places of potential severe exposure such as beaches.
• Do not leave infants, children, or pets in a parked car.
• Provide plenty of fresh water for your pets, and leave the water in a shady area.

Indoor Safety

Heat Your Home Safely

If you plan to use a wood stove, fireplace, or space heater, be extremely careful. Follow the manufacturer’s instructions as well as the home safety measures on page 3, and remember these safety tips:

• Use fireplace, wood stoves, or other combustion heaters only if they are properly vented to the outside and do not leak flue gas into the indoor air space.
• Do not burn paper in a fireplace.
• Ensure adequate ventilation if you must use a kerosene heater.
• Use only the type of fuel your heater is designed to use—don’t substitute.
• Do not place a space heater within 3 feet of anything that may catch on fire, such as drapes, furniture, or bedding, and never cover your space heater.
• Never place a space heater on top of furniture or near water.
• Never leave children unattended near a space heater.
• Make sure that the cord of an electric space heater is not a tripping hazard but do not run the cord under carpets or rugs.
• Avoid using extension cords to plug in your space heater.
• If your space heater has a damaged electrical cord or produces sparks, do not use it.
• Store a multipurpose, dry-chemical fire extinguisher near the area to be heated.
• Protect yourself from carbon monoxide (CO) poisoning by installing a battery-operated CO detector and never using generators, grills, camp stoves, or similar devices indoors.

Light and Cook Safely

If there is a power failure:
• Use battery-powered flashlights or lanterns rather than candles, if possible.
• Never leave lit candles unattended.
• Never use a charcoal or gas grill indoors—the flames are deadly.
• Never use an electric generator indoors, inside the garage, or near the air intake of your house because of the risk of carbon monoxide poisoning:
  • Plug in appliances to the generator using individual heavy-duty, outdoor-rated cords.
  • Do not use the generator or appliances if they are wet because of the risk of electrocution.
  • Do not store gasoline indoors where the fumes could ignite.
Conserve Heat
You may need fresh air coming in for your heater or for emergency cooking arrangements. However, if you don’t need extra ventilation, keep as much heat as possible inside your home. Avoid unnecessary opening of doors or windows. Close off unneeded rooms, stuff towels or rags in cracks under doors, and close draperies or cover windows with blankets at night.

Monitor Body Temperature
Infants less than one year old should never sleep in a cold room because (1) infants lose body heat more easily than adults; and (2) unlike adults, infants can’t make enough body heat by shivering. Provide warm clothing for infants and try to maintain a warm indoor temperature. If the temperature cannot be maintained, make temporary arrangements to stay elsewhere. In an emergency, you can keep an infant warm using your own body heat. If you must sleep, take precautions to prevent rolling on the baby. Pillows and other soft bedding can also present a risk of smothering; remove them from the area near the baby.

Older adults often make less body heat because of a slower metabolism and less physical activity. If you are over 65 years of age, check the temperature in your home often during severely cold weather. Also, check on elderly friends and neighbors frequently to ensure that their homes are adequately heated.

Keep a Water Supply
Extreme cold can cause water pipes in your home to freeze and sometimes rupture. When very cold temperatures are expected:
- Leave all water taps slightly open so they drip continuously.
- Keep the indoor temperature warm.
- Improve the circulation of heated air near pipes. For example, open kitchen cabinet doors beneath the kitchen sink.

If your pipes do freeze, do not thaw them with a torch. Instead, thaw them slowly by directing the warm air from an electric hair dryer onto the pipes. If you cannot thaw your pipes, or the pipes are ruptured, use bottled water or get water from a neighbor’s home. As an emergency measure—if no other water is available—snow can be melted for water. Bringing water to a rolling
What to Do

If you see any of these signs, you may be dealing with a life-threatening emergency. Have someone call for immediate medical assistance while you begin cooling the victim.

Do the following:

• Get the victim to a shady area.
• Cool the victim rapidly using whatever methods you can. For example, immerse the victim in a tub of cool water; place the person in a cool shower; spray the victim with cool water from a garden hose; sponge the person with cool water; or if the humidity is low, wrap the victim in a cool, wet sheet and fan him or her vigorously.
• Monitor body temperature, and continue cooling efforts until the body temperature drops to 101–102°F.
• If emergency medical personnel are delayed, call the hospital emergency room for further instructions.
• Do not give the victim fluids to drink.
• Get medical assistance as soon as possible.

Heat Exhaustion

Heat exhaustion is a milder form of heat-related illness that can develop after several days of exposure to high temperatures and inadequate or unbalanced replacement of fluids. It is the body’s response to an excessive loss of the water and salt contained in sweat. Those most prone to heat exhaustion are elderly people, people with high blood pressure, and people working or exercising in a hot environment.

Eat and Drink Wisely

Eating well-balanced meals will help you stay warmer. Do not drink alcoholic or caffeinated beverages—they cause your body to lose heat more rapidly. Instead, drink warm, sweet beverages or broth to help maintain your body temperature. If you have any dietary restrictions, ask your doctor.

Outdoor Safety

When the weather is extremely cold, and especially if there are high winds, try to stay indoors. Make any trips outside as brief as possible, and remember these tips to protect your health and safety:

Dress Warmly and Stay Dry

Adults and children should wear:

• a hat
• a scarf or knit mask to cover face and mouth
• sleeves that are snug at the wrist
• mittens (they are warmer than gloves)
• water-resistant coat and boots
• several layers of loose-fitting clothing

Be sure the outer layer of your clothing is tightly woven, preferably wind resistant, to reduce body-heat loss caused by wind. Wool, silk, or polypropylene inner layers of clothing will hold more body heat than cotton. Stay dry—wet clothing chills the body rapidly. Excess perspiration will increase heat loss, so remove extra layers of clothing whenever you feel too warm. Also, avoid getting gasoline or alcohol on your skin while de-icing and fueling your car or using a snow blower. These materials in contact with the skin greatly increase heat loss from the body. Do not ignore shivering. It’s an important first sign that the body is losing heat. Persistent shivering is a signal to return indoors.

Boil for one minute will kill most microorganisms or parasites that may be present, but won’t remove chemical pollutants sometimes found in snow.

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Recognizing Heat Exhaustion

Warning signs of heat exhaustion include the following:
- The skin may be cool and moist.
- The victim’s pulse rate will be fast and weak, and breathing will be fast and shallow.
If heat exhaustion is untreated, it may progress to heat stroke. Seek medical attention immediately if any of the following occurs:
- Symptoms are severe
- The victim has heart problems or high blood pressure
Otherwise, help the victim to cool off, and seek medical attention if symptoms worsen or last longer than 1 hour.

What to Do

Cooling measures that may be effective include the following:
- Cool, nonalcoholic beverages, as directed by your physician
- Rest
- Cool shower, bath, or sponge bath
- An air-conditioned environment
- Lightweight clothing

Heat Cramps

Heat cramps usually affect people who sweat a lot during strenuous activity. This sweating depletes the body’s salt and moisture. The low salt level in the muscles causes painful cramps. Heat cramps may also be a symptom of heat exhaustion.

Recognizing Heat Cramps

Heat cramps are muscle pains or spasms—usually in the abdomen, arms, or legs—that may occur in association with strenuous activity. If you have heart problems or are on a low-sodium diet, get medical attention for heat cramps.

- Heavy sweating
- Paleness
- Muscle cramps
- Tiredness
- Weakness
- Dizziness
- Headache
- Nausea or vomiting
- Fainting

Avoid Exertion

Cold weather puts an extra strain on the heart. If you have heart disease or high blood pressure, follow your doctor’s advice about shoveling snow or performing other hard work in the cold. Otherwise, if you have to do heavy outdoor chores, dress warmly and work slowly. Remember, your body is already working hard just to stay warm, so don’t overdo it.

Understand Wind Chill

The Wind Chill index is the temperature your body feels when the air temperature is combined with the wind speed. It is based on the rate of heat loss from exposed skin caused by the effects of wind and cold. As the speed of the wind increases, it can carry heat away from your body much more quickly, causing skin temperature to drop. When there are high winds, serious weather-related health problems are more likely, even when temperatures are only cool.

The Wind Chill Chart to the right shows the difference between actual air temperature and perceived temperature, and amount of time until frostbite occurs.

Wind Chill Chart

Actual air temperature °F

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8
What to Do

If medical attention is not necessary, take these steps:

• Stop all activity, and sit quietly in a cool place.
• Drink clear juice or a sports beverage.
• Do not return to strenuous activity for a few hours after the cramps subside, because further exertion may lead to heat exhaustion or heat stroke.
• Seek medical attention for heat cramps if they do not subside in 1 hour.

Sunburn

Sunburn should be avoided because it damages the skin. Although the discomfort is usually minor and healing often occurs in about a week, a more severe sunburn may require medical attention.

Recognizing Sunburn

Symptoms of sunburn are well known: the skin becomes red, painful, and abnormally warm after sun exposure.

What to Do

Consult a doctor if the sunburn affects an infant younger than 1 year of age or if these symptoms are present:

• Fever
• Fluid-filled blisters
• Severe pain

Also, remember these tips when treating sunburn:

• Avoid repeated sun exposure.
• Apply cold compresses or immerse the sunburned area in cool water.
• Apply moisturizing lotion to affected areas. Do not use salve, butter, or ointment.
• Do not break blisters.

Avoid Ice

Walking on ice is extremely dangerous. Many cold-weather injuries result from falls on ice-covered sidewalks, steps, driveways, and porches. Keep your steps and walkways as free of ice as possible by using rock salt or another chemical de-icing compound. Sand may also be used on walkways to reduce the risk of slipping.

Be Safe During Recreation

Notify friends and family where you will be before you go hiking, camping, or skiing. Do not leave areas of the skin exposed to the cold. Avoid perspiring or becoming over-tired. Be prepared to take emergency shelter. Pack dry clothing, a two-wave radio, waterproof matches and paraffin fire starters with you. Avoid walking on ice or getting wet. Carefully watch for signs of cold-weather health problems.

Avoid Cautious About Travel

• Listen for radio or television reports of travel advisories issued by the National Weather Service.
• Do not travel in low visibility conditions.
• Avoid traveling on ice-covered roads, overpasses, and bridges if at all possible.
• If you must travel by car, use tire chains and take a mobile phone with you.
• If you must travel, let someone know your destination and when you expect to arrive. Ask them to notify authorities if you are late.
• Check and restock the winter emergency supplies in your car before you leave.
• Never pour water on your windshield to remove ice or snow; shattering may occur.
• Don’t rely on a car to provide sufficient heat; the car may break down.
• Always carry additional warm clothing appropriate for the winter conditions.
Heat Rash
Heat rash is a skin irritation caused by excessive sweating during hot, humid weather. It can occur at any age but is most common in young children.

Recognizing Heat Rash
Heat rash looks like a red cluster of pimples or small blisters. It is more likely to occur on the neck and upper chest, in the groin, under the breasts, and in elbow creases.

What to Do
The best treatment for heat rash is to provide a cooler, less humid environment. Keep the affected area dry. Dusting powder may be used to increase comfort, but avoid using ointments or creams—they keep the skin warm and moist and may make the condition worse.

Treating heat rash is simple and usually does not require medical assistance. Other heat-related problems can be much more severe.

Cold-Weather Health Emergencies
Serious health problems can result from prolonged exposure to the cold. The most common cold-related problems are hypothermia and frostbite.

Hypothermia
When exposed to cold temperatures, your body begins to lose heat faster than it can be produced. Prolonged exposure to cold will eventually use up your body’s stored energy. The result is hypothermia, or abnormally low body temperature. Body temperature that is too low affects the brain, making the victim unable to think clearly or move well. This makes hypothermia particularly dangerous because a person may not know it is happening and won’t be able to do anything about it.

Hypothermia is most likely at very cold temperatures, but it can occur even at cool temperatures (above 40°F) if a person becomes chilled from rain, sweat, or submersion in cold water.

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What to Do if You Get Stranded
Staying in your vehicle when stranded is often the safest choice if winter storms create poor visibility or if roadways are ice-covered. These steps will increase your safety when stranded:

• Tie a brightly colored cloth to the antenna as a signal to rescuers and raise the hood of the car (if it is not snowing).
• Move anything you need from the trunk into the passenger area.
• Wrap your entire body, including your head, in extra clothing, blankets, or newspapers.
• Stay awake. You will be less vulnerable to cold-related health problems.
• Run the motor (and heater) for about 10 minutes per hour, opening one window slightly to let in air. Make sure that snow is not blocking the exhaust pipe—this will reduce the risk of carbon monoxide poisoning.
• Do not eat unmelted snow because it will lower your body temperature.
• Huddle with other people for warmth.
Victims of hypothermia are often (1) elderly people with inadequate food, clothing, or heating; (2) babies sleeping in cold bedrooms; (3) people who remain outdoors for long periods—the homeless, hikers, hunters, etc.; and (4) people who drink alcohol or use illicit drugs.

Recognizing Hypothermia

Warnings signs of hypothermia:

- Adults:
  - shivering, exhaustion
  - confusion, fumbling hands
  - memory loss, slurred speech
  - drowsiness

- Infants:
  - bright red, cold skin
  - very low energy

What to Do

If you notice any of these signs, take the person’s temperature. If it is below 95°, the situation is an emergency—get medical attention immediately.
Frostbite
Frostbite is an injury to the body that is caused by freezing. Frostbite causes a loss of feeling and color in affected areas. It most often affects the nose, ears, cheeks, chin, fingers, or toes. Frostbite can permanently damage the body, and severe cases can lead to amputation. The risk of frostbite is increased in people with reduced blood circulation and among people who are not dressed properly for extremely cold temperatures.

Recognizing Frostbite
At the first signs of redness or pain in any skin area, get out of the cold or protect any exposed skin—frostbite may be beginning. Any of the following signs may indicate frostbite:

• a white or grayish-yellow skin area
• skin that feels unusually firm or waxy
• numbness

A victim is often unaware of frostbite until someone else points it out because the frozen tissues are numb.

What to Do
If you detect symptoms of frostbite, seek medical care. Because frostbite and hypothermia both result from exposure, first determine whether the victim also shows signs of hypothermia, as described previously. Hypothermia is a more serious medical condition and requires emergency medical assistance.

If (1) there is frostbite but no sign of hypothermia and (2) immediate medical care is not available, proceed as follows:

• Get into a warm room as soon as possible.
• Unless absolutely necessary, do not walk on frostbitten feet or toes—this increases the damage.
• Immerse the affected area in warm—not hot—water (the temperature should be comfortable to the touch for unaffected parts of the body).
• Or, warm the affected area using body heat. For example, the heat of an armpit can be used to warm frostbitten fingers.
• Do not rub the frostbitten area with snow or massage it at all. This can cause more damage.
• Don’t use a heating pad, heat lamp, or the heat of a stove, fireplace, or radiator for warming. Affected areas are numb and can be easily burned.

These procedures are not substitutes for proper medical care. Hypothermia is a medical emergency and frostbite should be evaluated by a health care provider. It is a good idea to take a first aid and emergency resuscitation (CPR) course to prepare for cold-weather health problems. Knowing what to do is an important part of protecting your health and the health of others.

One Last Cool Tip . . .
Taking preventive action is your best defense against having to deal with extreme cold-weather conditions. By preparing your home and car in advance for winter emergencies, and by observing safety precautions during times of extremely cold weather, you can reduce the risk of weather-related health problems.
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