

### **Why talk about thunderstorms?**

Despite their small size, all thunderstorms are dangerous. Every thunderstorm produces lightning, which kills more people each year than tornadoes and hurricanes. Heavy rain from thunderstorms can lead to flash flooding. Strong winds, hail, and tornadoes are also dangers associated with some thunderstorms. High winds from thunderstorms can cause damage to homes, overturn vehicles, and blow down trees and utility poles, causing widespread power outages.

Many strong thunderstorms produce hail. Large hail, and the glass it may break, can injure people and animals. Hail can be smaller than a pea, or as large as a softball, and can be very destructive to automobiles, glass surfaces (skylights and windows), roofs, plants, and crops. Downbursts and straight-line winds associated with thunderstorms can produce winds of 100 to 150 miles (161 to 241 kilometers) per hour—enough to flip cars, vans, and pickup trucks. The resulting damage can equal the damage of most tornadoes.

### **How can I protect myself in a severe thunderstorm?**

Each year, many people are killed or seriously injured by severe thunderstorms despite advance warning. While some did not hear the warning, others heard the warning but did not heed it. The following preparedness information, combined with timely severe weather watches and warnings could save your life. Once you receive a warning or observe threatening skies, you yourself must make the decision to take shelter before the storm arrives. It could be the most important decision you will ever make.

In a hailstorm, take cover immediately. Pets and livestock are particularly vulnerable to hail, so bring animals into shelter before storms begin.

If a severe thunderstorm warning is issued, take shelter. Get out of structures, such as mobile homes, that are susceptible to being blown over in high winds. Stay away from downed power lines and report them immediately at (800) 372-7612.

### **How dangerous is lightning?**

Lightning is a major threat during a thunderstorm. Lightning produces thunder in a thunderstorm and is very unpredictable, increasing the risk to individuals and property.

According to the National Weather Service, lightning kills on average more than 70 people and injures at least 300 others each year in the United States. While only about 10 percent of those struck are killed, the large majority of the 90 percent who survive suffer long-term injuries, such as memory loss, dizziness, muscle spasms, depression, and fatigue. Lightning also causes about \$5 billion in economic loss each year in the United States.

Lightning often strikes outside the area of heavy rain and may occur as far as 10 miles (16 kilometers) from any rainfall. Heat lightning is actually lightning from a thunderstorm too far away for thunder to be heard.

You are in danger from lightning if you can hear thunder. Because light travels so much faster than sound, lightning flashes can sometimes be seen long before the resulting thunder is heard. When the lightning and thunder occur very close to one another, the lightning is striking nearby. To estimate the number of miles you are from a thunderstorm, count the number of seconds between a flash of lightning and the next clap of thunder. Divide this number by five.

More than 50 percent of lightning deaths occur after the thunderstorm has passed. The National Weather Service encourages you to practice the 30/30 lightning safety rule: If the time between seeing the lightning and hearing the thunder is less than 30 seconds, you are in danger. Stay indoors for 30 minutes after hearing the last clap of thunder.

### **What to Do if Someone Is Struck by Lightning**

#### **You should:**

- **Call for help.** Get someone to dial 9-1-1 or your local emergency number. Medical attention is needed as quickly as possible.
- **Give first aid.** If the person has stopped breathing, begin rescue breathing. If the person's heart has stopped beating, a trained person should give CPR. If the person has a pulse and is breathing, look for other possible injuries and care for them if necessary.
- **Check the person for burns in two places.** The injured person has received an electrical shock and may be burned both where the current entered and where it exited his or her body. Being struck by lightning can also cause nervous system damage, broken bones, and loss of hearing or eyesight. People struck by lightning carry no electrical charge that can shock other people, and they can be handled safely.

### **What is the best source of information about severe thunderstorms in my area?**

Local radio or television stations or NOAA Weather Radio are the best sources of information about severe thunderstorms and other weather-related bulletins in your area.

NOAA Weather Radio is the prime alerting and critical information delivery system of the National Weather Service (NWS). NOAA Weather Radio broadcasts warnings, watches, forecasts, and other hazards information 24 hours a day over more than 650 stations in the 50 states, adjacent coastal waters, Puerto Rico, the U.S. Virgin Islands, and the U.S. Pacific territories.

The NWS encourages people to buy a weather radio equipped with the Specific Area Message Encoder (SAME) feature. This feature automatically alerts you when important information is issued about severe thunderstorms or other weather-related hazards in your area. Information on NOAA Weather Radio is available from your local NWS office or at [www.nws.noaa.gov/nwr](http://www.nws.noaa.gov/nwr).

## **Watch, Warning**

A **Severe Thunderstorm WATCH** means severe thunderstorms are possible in and near the watch area. People in a watch area should keep informed and be ready to act if a severe thunderstorm warning is issued.

A **Severe thunderstorm WARNING** means severe weather has been reported by spotters or indicated by radar. Warnings indicate imminent danger to life and property.

### **You should:**

- **Discuss thunderstorm safety with members of your household.** Be aware that a thunderstorm could produce a tornado. Tornadoes develop from severe thunderstorms along and ahead of cold fronts.
  
- **Pick a safe place in your home for household members to gather during a thunderstorm.** This should be a place where there are no windows, skylights, or glass doors, which could be broken by strong winds or hail and cause damage or injury. In preparation for possible tornado warnings, consider making your severe thunderstorm-safe place on the lowest floor of the building.
  
- **Learn about your community's warning system for severe thunderstorms.** Make sure all members of your household understand the system. Use a NOAA Weather Radio or listen to a local radio or television station to keep aware of watches and warnings while you are indoors. Make sure everyone in your household knows the name of the county or parish where you live because severe thunderstorm watches and warnings are issued for counties or parishes. People should also know the name of the county or parish they are in if they are away from home.
  
- **Learn how to crouch low to the ground on the balls of your feet.** Place your hands on your knees and your head between your knees. Minimize your body's surface area, and minimize your contact with the ground. Lightning current often enters a victim through the ground rather than by a direct overhead strike.
  
- **Make a list of items to bring inside in the event of a severe thunderstorm.** Having a list will help you remember things that may be broken or blown away in strong winds.
  
- **Keep trees and shrubbery trimmed.** Make trees more wind resistant by removing diseased or damaged limbs, then strategically remove branches so that wind can blow through. Strong winds frequently break weak limbs and hurl them at great speed.
  
- **Remove any debris or loose items from around your home and outbuildings and from pastures.** Branches and firewood may become missiles in strong winds.

- **Install lightning rods on your home and on barns or any other building that house animals.** Lightning rods will carry the electrical charge of lightning bolts safely to the ground, greatly reducing the chance of a lightning-induced fire.

- **Postpone outdoor activities if thunderstorms are imminent.** Coaches of outdoor sports teams should use a NOAA Weather Radio during practice sessions and games. Threatening weather can endanger athletes, staff, and spectators. Remember that most people struck by lightning are not in an area where rain is falling. Postponing activities is your best way to avoid being caught in a dangerous situation.

- **Keep an eye on the sky.** Pay attention to weather clues around you that may warn of imminent danger. Look for darkening skies, flashes of lightning, or increasing wind, which may be signs of an approaching thunderstorm.

- **Be aware of your surroundings.** Look for places you could go if severe weather threatens.

- **Listen for the sound of thunder.** If you can hear thunder, you are close enough to the storm to be struck by lightning. Go to safe shelter immediately.

- **Even if there is no official thunderstorm warning, if you see signs of a thunderstorm, take precautions.**

- **Use a NOAA Weather Radio or listen to a local radio or television station.** Local authorities will provide you with the best information for your particular situation. **Battery-powered radios** will allow you to have access to information even if the power goes out.

- **Avoid natural lightning rods, such as golf clubs, fishing poles, tractors, bicycles, and camping equipment.** Lightning is attracted to metal and poles or rods.

- **Be prepared to take shelter.** A sturdy building is the safest place to be during a severe thunderstorm. Avoid gazebos, rain or picnic shelters, golf carts, baseball dugouts, bleachers, and other isolated structures in otherwise open areas because such places are often struck by lightning. In addition, gazebos and picnic shelters are often poorly anchored and subject to being uprooted and blown around in strong thunderstorm winds. They also offer little protection from large hail.

- **Avoid electrical equipment and telephones.** Lightning could follow the wire. Television sets are particularly dangerous at this time. Use a battery-powered radio or television.

- **Avoid bathtubs, water faucets, and sinks because metal pipes can transmit electricity.**

- **Unplug appliances** and avoid using the telephone or any electrical appliances. If lightning strikes, telephone lines and metal pipes can conduct electricity. Leaving electric lights on, however, does not increase the chances of your home being struck by lightning.
- **Turn off the air conditioner.** Power surges from lightning can overload the compressor, resulting in a costly repair job.

### **What to Do After a Severe Thunderstorm**

#### **You should:**

- **Continue using a NOAA Weather Radio or listening to a local radio or television station for updated information and instructions.** Access may be limited to some parts of the community or roads may be blocked.
- **Help people who require special assistance**—infants, elderly people, those without transportation, large families who may need additional help in an emergency situation, people with disabilities, and the people who care for them.
- **Stay away from storm-damaged areas** to avoid putting yourself at further risk from the residual effects of severe thunderstorms. Sightseers cause additional problems and hamper local responders assisting those in need.
- **Watch out for fallen power lines and report them immediately.** Reporting potential hazards will get the utilities turned off as quickly as possible, preventing further hazard and injury. If assistance is needed in your area and telephone communications are disrupted, go to your nearest fire or police station to request assistance.

*Courtesy of the National Disaster Education Coalition*