

# FACT SHEET



Federal Emergency Management Agency

## THUNDERSTORMS AND LIGHTNING

Some thunderstorms can be seen approaching, while others hit without warning. It is important to learn and recognize the danger signs and to plan ahead.

Learn the thunderstorm danger signs.

- Dark, towering or threatening clouds
- Distant lightning and thunder

Have disaster supplies on hand.

- Flashlight and extra batteries
- Portable, battery-operated radio and extra batteries
- Emergency food and water
- Nonelectric can opener
- First aid kit and manual
- Essential medicines
- Cash and credit cards
- Sturdy shoes

Check for hazards in the yard.

Dead or rotting trees and branches can fall during a severe thunderstorm and cause injury or damage.

Make sure that all family members know how to respond after a thunderstorm.

Teach family members how and when to turn off gas, electricity and water.

Teach children how and when to call 9-1-1, police, fire department and which radio station to tune to for emergency information.

### Severe Thunderstorm Watches and Warnings

A severe thunderstorm watch is issued by the National Weather Service when the weather conditions are such that a severe thunderstorm (damaging winds 58 miles per hour or more, or hail three-fourths of an inch in diameter or greater) is likely to develop. This is the time to locate a safe place in the home and tell family members to watch the sky and listen to the radio or television for more information.

A severe thunderstorm warning is issued when a severe thunderstorm has been sighted or indicated by weather radar. At this point, the danger is very serious and everyone should go to a safe place, turn on a battery-operated radio or television, and wait for the "all clear" by the authorities.

Learn how to respond to a tornado and flash flood.

Tornadoes are spawned by thunderstorms and flash flooding can occur with thunderstorms.

When a "severe thunderstorm warning" is issued, review what actions to take under a "tornado warning" or a "flash flood warning."

Develop an emergency communication plan.

In case family members are separated from one another during a thunderstorm (a real possibility during the day when adults are at work and children are at school), have a plan for getting back together.

Ask an out-of-state relative or friend to serve as the "family contact." After a disaster, it's often easier to call long distance. Make sure everyone in the family knows the name, address, and phone number of the contact person.

Contact your local emergency management office or American Red Cross chapter for more information on thunderstorms and lightning.

**If indoors:**

- Secure outdoor objects such as lawn furniture that could blow away or cause damage or injury. Take light objects inside.
- Shutter windows securely and brace outside doors.
- Listen to a battery-operated radio or television for the latest storm information.
- Do not handle any electrical equipment or telephones because lightning could follow the wire. Television sets are particularly dangerous at this time.
- Avoid bathtubs, water faucets, and sinks because metal pipes can transmit electricity.

**If outdoors:**

- Attempt to get into a building or car.
- If no structure is available, get to an open space and squat low to the ground as quickly as possible. (If in the woods, find an area protected by a low clump of trees— never stand underneath a single large tree in the open.) Be aware of the potential for flooding in low-lying areas.
- Kneel or crouch with hands on knees.
- Avoid tall structures such as towers, tall trees, fences, telephone lines, or power lines.
- Stay away from natural lightning rods such as golf clubs, tractors, fishing rods, bicycles, or camping equipment.
- Stay away from rivers, lakes, or other bodies of water.

- If you are isolated in a level field or prairie and you feel your hair stand on end (which indicates that lightning is about to strike), drop to your knees and bend forward, putting your hands on your knees. Do not lie flat on the ground.

**If in a car:**

- Pull safely onto the shoulder of the road away from any trees that could fall on the vehicle.
- Stay in the car and turn on the emergency flashers until the heavy rains subside.
- Avoid flooded roadways.

**Estimating the Distance from a Thunderstorm**

Because light travels so much faster than sound, lightning flashes can be seen long before the resulting thunder is heard. Estimate the number of miles you are from a thunderstorm by counting the number of seconds between a flash of lightning and the next clap of thunder. Divide this number by five.

**Important:** You are in danger from lightning if you can hear thunder. Knowing how far away a storm is does not mean that you're in danger only when the storm is overhead.

**Hail**

Hail is produced by many strong thunderstorms. Hail can be smaller than a pea or as large as a softball and can be very destructive to plants and crops. In a hailstorm, take cover immediately. Pets and livestock are particularly vulnerable to hail, so bring animals into a shelter.

**Check for injuries.**

A person who has been struck by lightning does not carry an electrical charge that can shock other people. If the victim is burned, provide first aid and call emergency medical assistance immediately. Look for burns where lightning entered and exited the body. If the strike caused the victim's heart and breathing to stop, give cardiopulmonary resuscitation (CPR) until medical professionals arrive and take over.

Remember to help your neighbors who may require special assistance — infants, elderly people, and people with disabilities.

Report downed utility wires.

Drive only if necessary. Debris and washed-out roads may make driving dangerous.

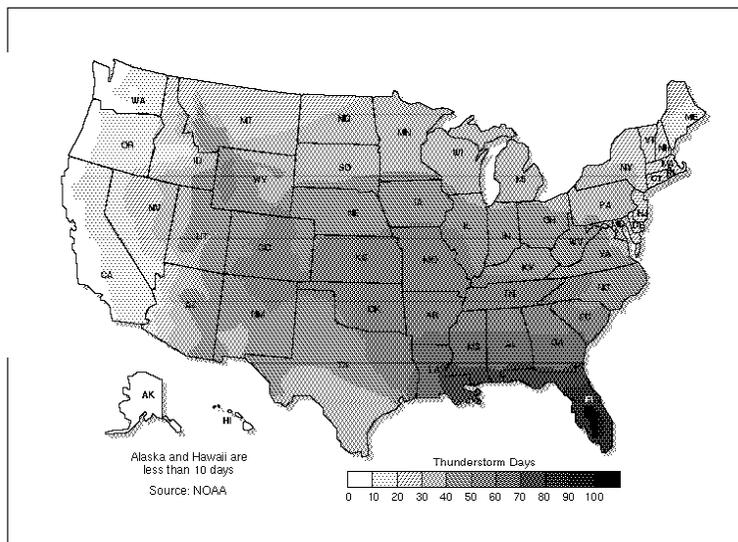
**Mitigation**

Mitigation includes any activities that prevent an emergency, reduce the chance of an emergency happening, or lessen the damaging effects of unavoidable emergencies. Investing in preventive mitigation steps now, such as installing lightning rods to carry the electrical charge of lightning bolts safely to the ground or purchasing flood insurance, will help reduce the impact of severe thunderstorms in the future. For more information on mitigation, contact your local emergency management office.

## THUNDERSTORMS AND LIGHTNING

### EMERGENCY INFORMATION

1. Thunderstorms can bring heavy rains (which can cause flash flooding), strong winds, hail, lightning, and tornadoes. In a severe thunderstorm get inside a sturdy building and stay tuned to a battery-operated radio for weather information.
2. Lightning is a major threat during a thunderstorm. In the United States, between 75 and 100 Americans are hit and killed each year by lightning. If you are caught outdoors, avoid natural lightning rods such as tall, isolated trees in an open area or top of a hill and metal objects such as wire fences, golf clubs, and metal tools.
3. It is a myth that lightning never strikes twice in the same place. In fact, lightning will strike several times in the same place in the course of one discharge.



While thunderstorms and lightning can be found throughout the United States, they are most likely to occur in the central and southern states. The state with the highest number of thunderstorm days is Florida.

### WHAT IS A THUNDERSTORM?

*A thunderstorm is formed from a combination of moisture, rapidly rising warm air and a force capable of lifting air such as a warm and cold front, a sea breeze, or a mountain. All thunderstorms contain lightning. Thunderstorms may occur singly, in clusters, or in lines. Thus, it is possible for several thunderstorms to affect one location in the course of a few hours. Some of the most severe weather occurs when a single thunderstorm affects one location for an extended time.*

### WHAT IS LIGHTNING?

*Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a "bolt." This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches a temperature approaching 50,000 degrees Fahrenheit in a split second. The rapid heating and cooling of air near the lightning causes thunder.*

## HELP YOUR COMMUNITY GET READY

The media can raise awareness about thunderstorms and lightning by providing important information to the community. Here are some suggestions:



1. Publish a special section in your local newspaper with emergency information about thunderstorms and lightning.

Place special emphasis on what people should do if they are caught outside. Localize the information by printing the phone numbers of local emergency services offices, the American Red Cross, and hospitals.

2. Interview officials with the U.S. Department of Agriculture about the Federal Crop Insurance Corporation.



3. Periodically inform your community of local public warning systems.
4. Have your meteorologist speak to elementary schools and youth groups about thunderstorms, lightning and hail.



5. Interview a representative of the American Red Cross about giving first aid to people struck by lightning.

## DID YOU KNOW . . .

- At any given moment, nearly 1,800 thunderstorms are in progress over the surface of the earth.
- On average, the United States gets 100,000 thunderstorms each year. Approximately 1,000 tornadoes develop from these storms.
- Large hail results in nearly \$1 billion in damage to property and crops.
- The power of lightning's electrical charge and intense heat can electrocute on contact, split trees, ignite fires, and cause electrical failures.
- More deaths from lightning occur on the East Coast. More forest fires are started in the West as the lightning season coincides with the dry season there.
- Approximately 10,000 forest fires are started each year by lightning. Approximately \$100 million in annual losses result from forest and building fires caused by lightning.
- Straight-line winds exceeding 100 mph are responsible for most thunderstorm damage.

## HOW THE PUBLIC CAN HELP AFTER A DISASTER

When disaster strikes, people everywhere want to help those in need. To ensure that this compassion and generosity are put to good use, the media can highlight these facts:

- ▶ Financial aid is an immediate need of disaster victims. Financial contributions should be made through a recognized voluntary organization to help ensure that contributions are put to their intended use.
- ▶ Before donating food or clothing, wait for instructions from local officials. Immediately after a disaster, relief workers usually don't have the time or facilities to setup distribution channels, and too often these items go to waste.
- ▶ Volunteers should go through a recognized voluntary agency such as the American Red Cross or Salvation Army. They know what is needed and are prepared to deal with the need. Local emergency services officials also coordinate volunteer efforts for helping in disasters.
- ▶ Organizations and community groups wishing to donate items should first contact local officials, the American Red Cross, or Salvation Army to find out what is needed and where to send it. Be prepared to deliver the items to one place, tell officials when you'll be there, and provide for transportation, driver, and unloading.

