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Thunderstorms & Lightning

All thunderstorms are dangerous. Every thunderstorm produces lightning. While lightning fatalities have decreased over



the past 30 years, lightning continues to be one of the top three storm-related killers in the United States. On average in the U.S., lightning kills 51 people and injures hundreds more. Although most lightning victims survive, people struck by lightning often report a variety of long-term, debilitating symptoms.

Other associated dangers of thunderstorms include [tornadoes \(/tornadoes\)](#), strong winds, hail and [flash flooding \(/floods\)](#). Flash flooding is responsible for more fatalities – more than 140 annually – than any other thunderstorm-associated hazard. Dry thunderstorms that do not produce rain that reaches the ground are most prevalent in the western United States. Falling raindrops evaporate, but lightning can still reach the ground and can start [wildfires \(/wildfires\)](#).

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▼ Before Thunderstorm And Lightning

To prepare for a thunderstorm, you should do the following:

- To begin preparing, you should [build an emergency kit \(/build-a-kit\)](#) and [make a family communications plan \(/family-communications\)](#).
- Remove dead or rotting trees and branches that could fall and cause injury or damage during a severe thunderstorm.
- Postpone outdoor activities.
- Secure outdoor objects that could blow away or cause damage.

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- Get inside a home, building, or hard top automobile (not a convertible). Although you may be injured if lightning strikes your car, you are much safer inside a vehicle than outside.
- Remember, rubber-soled shoes and rubber tires provide NO protection from lightning. However, the steel frame of a hard-topped vehicle provides increased protection if you are not touching metal.
- Shutter windows and secure outside doors. If shutters are not available, close window blinds, shades or curtains.
- Unplug any electronic equipment well before the storm arrives.

Lightning Risk Reduction When Outdoors

If you are:	Then:
In a forest	Seek shelter in a low area under a thick growth of small trees.
In an open area	Go to a low place such as a ravine or valley. Be alert for flash floods.
On open water	Get to land and find shelter immediately.

Facts about Thunderstorms

- They may occur singly, in clusters or in lines.
- Some of the most severe occur when a single thunderstorm affects one location for an extended time.
- Thunderstorms typically produce heavy rain for a brief period, anywhere from 30 minutes to an hour.
- Warm, humid conditions are highly favorable for thunderstorm development.
- About 10 percent of thunderstorms are classified as severe – one that produces hail at least an inch or larger in diameter, has winds of 58 miles per hour or higher or produces a tornado (/tornadoes).

Facts about Lightning

- Lightning’s unpredictability increases the risk to individuals and property.

- Lightning often strikes outside of heavy rain and may occur as far as 10 miles away from any rainfall.
- “Heat lightning” is actually lightning from a thunderstorm too far away from thunder to be heard. However, the storm may be moving in your direction.
- Most lightning deaths and injuries occur when people are caught outdoors in the summer months during the afternoon and evening.
- Your chances of being struck by lightning are estimated to be 1 in 600,000 but could be reduced even further by following safety precautions.
- Lightning strike victims carry no electrical charge and should be attended to immediately.

Know the Terms

Familiarize yourself with these terms to help identify a thunderstorm hazard:

Severe Thunderstorm Watch - Tells you when and where severe thunderstorms are likely to occur. Watch the sky and stay tuned to NOAA Weather Radio, commercial radio or television for information.

Severe Thunderstorm Warning - Issued when severe weather has been reported by spotters or indicated by radar. Warnings indicate imminent danger to life and property to those in the path of the storm.

▼ During Thunderstorms And Lightning

If thunderstorm and lightning are occurring in your area, you should:

- Use your battery-operated NOAA Weather Radio for updates from local officials.
- Avoid contact with corded phones and devices including those plugged into electric for recharging. Cordless and wireless phones not connected to wall outlets are OK to use.
- Avoid contact with electrical equipment or cords. Unplug appliances and other electrical items such as computers and

turn off air conditioners. Power surges from lightning can cause serious damage.

- Avoid contact with plumbing. Do not wash your hands, do not take a shower, do not wash dishes, and do not do laundry. Plumbing and bathroom fixtures can conduct electricity.
- Stay away from windows and doors, and stay off porches.
- Do not lie on concrete floors and do not lean against concrete walls.
- Avoid natural lightning rods such as a tall, isolated tree in an open area.
- Avoid hilltops, open fields, the beach or a boat on the water.
- Take shelter in a sturdy building. Avoid isolated sheds or other small structures in open areas.
- Avoid contact with anything metal—tractors, farm equipment, motorcycles, golf carts, golf clubs, and bicycles.
- If you are driving, try to safely exit the roadway and park. Stay in the vehicle and turn on the emergency flashers until the heavy rain ends. Avoid touching metal or other surfaces that conduct electricity in and outside the vehicle.

✓ After A Thunderstorm Or Lightning Strike

If lightning strikes you or someone you know, call 9-1-1 for medical assistance as soon as possible. The following are things you should check when you attempt to give aid to a victim of lightning:

- **Breathing** - if breathing has stopped, begin mouth-to-mouth resuscitation.
- **Heartbeat** - if the heart has stopped, administer CPR.
- **Pulse** - if the victim has a pulse and is breathing, look for other possible injuries. Check for burns where the lightning entered and left the body. Also be alert for nervous system damage, broken bones and loss of hearing and eyesight.

After the storm passes remember to:

- Never drive through a flooded roadway. Turn around, don't drown!
- Stay away from storm-damaged areas to keep from putting yourself at risk from the effects of severe thunderstorms.
- Continue to listen to a NOAA Weather Radio or to local radio and television stations for updated information or instructions, as access to roads or some parts of the community may be blocked.
- Help people who may require special assistance, such as infants, children and the elderly or those with access or functional needs.
- Stay away from downed power lines and report them immediately.
- Watch your animals closely. Keep them under your direct control.

✓ Resources

FEMA and National Weather Service

If you require more information about any of these topics, the following resources may be helpful.

- *Facts about Lightning*
(<http://www.nws.noaa.gov/os/lightning/resources/LightningFactsSheet.pdf>)
two-page facts sheet for boaters. Available online at
- *How to Guides to Protect Your Property or Business from High Winds*
(<http://www.fema.gov/library/viewRecord.do?id=3263>).

Related Websites

Find additional information on how to plan and prepare for a thunderstorm and learn about available resources by visiting the following websites:

- [Federal Emergency Management Agency \(http://www.fema.gov\)](http://www.fema.gov)
- [NOAA Watch \(http://www.nws.noaa.gov/om/thunderstorm/index.shtml\)](http://www.nws.noaa.gov/om/thunderstorm/index.shtml)
- [Centers for Disease Control and Prevention - Lightning \(https://www.cdc.gov/disasters/lightning/\)](https://www.cdc.gov/disasters/lightning/)

- [American Red Cross](http://www.redcross.org/prepare/disaster/thunderstorm)
(<http://www.redcross.org/prepare/disaster/thunderstorm>)

Listen to Local Officials

Learn about the emergency plans that have been established in your area by your [state and local government \(/community-state-info\)](#). In any emergency, always listen to the instructions given by local emergency management officials.

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 Official website of the Department of Homeland Security