



Weather Safety: Lightning

Safety and Preparedness Factsheet

Lightning Safety for You and Your Family

When Thunder Roars, Go Indoors!

Each year in the United States, more than 400 people are struck by lightning. On average, between 55 and 60 people are killed; hundreds of others suffer permanent neurological disabilities. Most of these tragedies can be avoided with a few simple precautions. When thunderstorms threaten, get to a safe place. Lightning safety is an inconvenience that can save your life.

The National Oceanic and Atmospheric Administration (NOAA) collects information on weather-related deaths to learn how to prevent these tragedies. Many lightning victims say they were “caught” outside in the storm and couldn’t get to a safe place. With proper planning, these tragedies could be prevented.

Other victims waited too long before seeking shelter. By heading to a safe place 5 to 10 minutes sooner, they could have avoided being struck by lightning.

Some people were struck because they went back outside too soon. Stay inside a safe building or vehicle for at least 30 minutes after you hear the last thunder clap.

Finally, some victims were struck inside homes or buildings while they were using electrical equipment or corded phones. Others were in contact with plumbing, a metal door or a window frame. Avoid contact with these electrical conductors when a thunderstorm is nearby!

What You Might Not Know About Lightning

- ▶ **All thunderstorms produce lightning and are dangerous.** In the United States, in an average year, lightning kills about the same number of people as tornadoes and more people than hurricanes.
- ▶ **Lightning often strikes outside the area of heavy rain and may strike as far as 10 miles from any rainfall.** Many lightning deaths occur ahead of storms or after storms have seemingly passed.
- ▶ **If you can hear thunder, you are in danger.** Don’t be fooled by blue skies. If you hear thunder, lightning is close enough to pose an immediate threat.

- ▶ Lightning leaves many victims with permanent disabilities. While a small percentage of lightning strike victims die, many survivors must learn to live with very serious lifelong pain and neurological disabilities.

Avoid the Lightning Threat

- ▶ **Have a lightning safety plan.** Know where you’ll go for safety and how much time it will take to get there. Make sure your plan allows enough time to reach safety.
- ▶ **Postpone activities.** Before going outdoors, check the forecast for thunderstorms. Consider postponing activities to avoid being caught in a dangerous situation.
- ▶ **Monitor the weather.** Look for signs of a developing thunderstorm such as darkening skies, flashes of lightning or increasing wind.
- ▶ **Get to a safe place.** If you hear thunder, even a distant rumble, immediately move to a safe place. Fully enclosed buildings with wiring and plumbing provide the best protection. Sheds, picnic shelters, tents or covered porches do NOT protect you from lightning. If a sturdy building is not nearby, get into a hard-topped metal vehicle and close all the windows. Stay inside until 30 minutes after the last rumble of thunder.
- ▶ **If you hear thunder, don’t use a corded phone except in an emergency.** Cordless phones and cell phones are safe to use.
- ▶ **Keep away from electrical equipment and wiring.**
- ▶ **Water pipes conduct electricity.** Don’t take a bath or shower or use other plumbing during a storm.

Organized Outdoor Activities

Many people enjoy outdoor activities. It’s essential for the people in charge of these activities to understand the dangers of lightning, have a lightning safety plan in place, and follow the plan once thunder is heard or lightning is seen. Many outdoor activities rely on volunteer leaders, coaches or sports officials to make safety decisions. Make sure the leaders of these activities follow a lightning safety plan. Don’t be afraid to ask, and don’t be afraid to speak out during an event if conditions become unsafe. You could save a life!

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What You Should Know About Being Caught Outside Near a Thunderstorm

There is no safe place outside in a thunderstorm. Plan ahead to avoid this dangerous situation! If you're outside and hear thunder, the only way to significantly reduce your risk of becoming a lightning casualty is to get inside a substantial building or hard-topped metal vehicle as fast as you can. In addition, you should avoid the following situations which could increase your risk of becoming a lightning casualty. Remember – there is no substitute for getting to a safe place.

- ▶ **Avoid open areas.** Don't be the tallest object in the area.
- ▶ **Stay away from isolated tall trees, towers or utility poles.** Lightning tends to strike the taller objects in an area.
- ▶ **Stay away from metal conductors such as wires or fences.** Metal does not attract lightning, but lightning can travel long distances through it.

If you are with a group of people, spread out. While this actually increases the chance that someone might get struck, it tends to prevent multiple casualties, and increases the chances that someone could help if a person is struck.

Act Fast If Someone Is Struck by Lightning!

- ▶ **Lightning victims do not carry an electrical charge, are safe to touch, and need urgent medical attention.** Cardiac arrest is the immediate cause of death for those who die. Some deaths can be prevented if the victim receives the proper first aid immediately.
- ▶ **Call for help.** Call 9-1-1 or your local ambulance service.
- ▶ **Give first aid.** Do not delay CPR if the person is unresponsive or not breathing. Use an Automatic External Defibrillator if one is available.

- ▶ **If possible, move the victim to a safer place.** Lightning can strike twice. Don't become a victim.

Stay Informed About Storms Listen to NOAA Weather Radio All Hazards

There are an estimated 25 million cloud-to-ground lightning flashes in the U.S. each year. While the National Weather Service (NWS) issues severe thunderstorm watches and warnings for storms that produce damaging wind or hail, watches and warnings are NOT issued for lightning. When you hear thunder, there is an immediate lightning danger.

As a further safety measure, consider purchasing a portable, battery-powered, tone-alert NOAA Weather Radio All Hazards. The radio will allow you to monitor any short-term forecasts for changing weather conditions. The tone-alert feature can automatically alert you when the NWS issues a severe thunderstorm watch or warning.

For More Information

NWS lightning links, forecasts, assessments:

<http://www.lightningsafety.noaa.gov>

NOAA Weather Radio All Hazards:

<http://www.weather.gov/nwr>

American Red Cross:

<http://www.redcross.org>

Federal Emergency Management Agency:

<http://www.fema.gov>

Remember, When Thunder Roars, Go Indoors!

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TOP-10 MYTHS OF LIGHTNING SAFETY

- MYTH:** Lightning Never Strikes The Same Place Twice
TRUTH: Lightning often strikes the same place repeatedly, especially if it's a tall pointy isolated object. The Empire State Building used to be used as a lightning laboratory, since it is hit nearly 25 times a year. Places prone to lightning are places to avoid when thunderstorms are nearby!
- MYTH:** If It's Not Raining, Or If Clouds Aren't Overhead, I'm Safe From Lightning
TRUTH: Lightning often strikes more than three miles from the thunderstorm, far outside the rain or even thunderstorm cloud. 'Bolts From The Blue', though infrequent, can strike 10-15 Miles from the thunderstorm. Anvil lightning can strike the ground over 50 Miles from the thunderstorm, under extreme conditions. Lightning in clouds has traveled over 100 miles from the thunderstorm.
- MYTH:** Rubber Tires Protect You From Lightning In A Car By Insulating You From The Ground
TRUTH: Lightning laughs at two inches of rubber! Most cars are reasonably safe from lightning. But it's the metal roof and metal sides that protect you, not the rubber tires. Thus convertibles, motorcycles, bicycles, open shelled outdoor recreational vehicles, and cars with plastic or fiberglass shells offer no lightning protection. Likewise, farm and construction vehicles with open cockpits offer no lightning protection. But closed cockpits with metal roof and sides are safer than going outside. And don't even ask about sneakers! ☺
- MYTH:** A Lightning Victim Is Electrified. If You Touch Them, You'll Be Electrocuted.
TRUTH: The human body doesn't store electricity. It is perfectly safe to touch a lightning victim to give them first aid. This is the most chilling of lightning myths. Imagine someone dying needlessly, for want of simple CPR or mouth-to-mouth resuscitation, when their chances of survival was ~90%!
- MYTH:** If Outside In A Thunderstorm, Go Under A Tree To Stay Dry
TRUTH: Being underneath trees is the second leading activity for lightning casualties – enough said?!
- MYTH:** I'm In A House, I'm Safe From Lightning
TRUTH: While a house is a good place for lightning safety, just going inside isn't enough. You must avoid any conducting path leading outside, such as corded telephones, electrical appliances, wires, TV cables, plumbing (including plastic pipes with water in them), metal doors or window frames, etc. Don't stand near a window to watch the lightning. An inside room is generally best.
- MYTH:** When Playing Sports And Thunderstorms Threaten, It's Okay To Finish The Game Before Seeking Shelter
TRUTH: Sports is the activity with the fastest rising rate of lightning casualties. No game is worth death or life-long severe injury. All people associated with sports should have a lightning safety plan and stick to it strictly. Seek proper shelter immediately when lightning threatens. Adults are responsible for the safety of children!
- MYTH:** Structures With Metal, Or Metal On The Body (Jewelry, Watches, Glasses, Backpacks, Etc.), Attract Lightning
TRUTH: Height, pointy shape, and isolation are the dominant factors controlling where a lightning bolt will strike. The presence of metal makes virtually no difference on where lightning strikes. Mountains are made of stone, but receive many strikes each year. When lightning threatens, take proper protective action immediately. Don't waste time shedding metal off your body, or seeking shelter under inadequate structures. But while metal doesn't attract lightning, touching or being near long metal objects (fences, railings, bleachers, vehicles, etc.) is still unsafe when thunderstorms are nearby. If lightning does happen to hit it, the metal can conduct the electricity a long distance (even over 100 yards) and still electrocute you.
- MYTH:** If Trapped Outside And Lightning Is About To Strike, Lie Flat On The Ground
TRUTH: This advice is decades out of date. Better advice is to use the 'Lightning Crouch': put your feet together, squat low, tuck your head, and cover your ears. Lightning induces electric currents along the top of the ground that can be deadly over 100 Feet away. While lying flat on the ground gets you as low as possible, which is good, it increases your chance of being hit by a ground current, which is bad. The best combination of being low and touching the ground as little as possible is the 'Lightning Crouch'. But the 'Lightning Crouch' should be used only as a last resort. Much better would be to plan outdoor activities around the weather to avoid thunderstorm exposure and to have proper shelter available.
- MYTH:** Go near a tall pointy isolated object when thunderstorms threaten, to be within the 45° "cone of protection"
TRUTH: The "cone of protection" is a myth! While tall pointy isolated objects are statistically more likely to be struck by lightning, it's not nearly reliable enough to rely on for safety. Lightning can still strike you near the tall object. Besides, the lightning electricity will likely spread out along the surface of the ground and can still kill you over 100 Ft from the "protecting" object. Also, if you are close to or touching the tall object, you can be electrocuted via side flash or contact voltage. **NO PLACE OUTSIDE IS SAFE NEAR A THUNDERSTORM!**



In lightning safety, a "myth" is not as good as a mile ☺. Distance and proper shelter is your best protection from lightning.

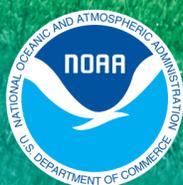
This list is for information only. No guarantee of lightning safety is stated or implied for this list. For a full description of personal lightning safety, see the Lightning Safety Group recommendations.

LIGHTNING KILLS

PLAY IT SAFE

"When lightning threatens, do what the pros do... Get off the course."

Vijay Singh
2000 Masters Champion
1998 PGA Champion



www.lightningsafety.noaa.gov