

# LIGHTNING... NATURE'S FIREWORKS

Lightning occurs with all thunderstorms. It averages 93 deaths and 300 injuries each year. It also causes several hundred million dollars in damage to property and forests annually. You should be aware of the dangers of lightning and how to protect yourself and your family from becoming victims. Here are some helpful facts about nature's fireworks...

- What is lightning? Lightning occurs when the action of rising and descending air within a thunderstorm separates positive and negative charges. Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas.
- The average flash of lightning could light a 100-watt light bulb for more than three months.
- Most lightning occurs within the cloud or between the cloud and ground.
- The air near a lightning strike is heated to 50,000 F- *hotter than the surface of the sun!* The rapid heating and cooling of air near the lightning channel causes a shock wave that results in **thunder**.
- To estimate the distance in miles between you and the lightning flash, count the seconds between the lightning and the thunder and divide by five.
- Most lightning deaths and injuries occur when people are caught outdoors. Most casualties occur in the summer months and during the afternoon and early evening.
- Your chances of being struck by lightning are estimated to be 1 in 600,000.
- In recent years, people have been killed by lightning while boating, swimming, golfing, bike riding, standing under a tree, riding on a lawnmower, talking on the telephone, loading a truck, playing soccer, fishing in a boat, and mountain climbing.



## LIGHTNING EVENTS

10 Jul 1926: Lightning Exploded A Navy Ammunition Depot, Mount Hope NJ. -- 19 People Died, 38 Wounded, And Cost \$81 Million To Rebuild (1999 Dollars)!

6 May 1937: Hindenberg Airship Destroyed By An Electrostatic Discharge -- 36 People Died!

June 1998: Lightning Struck An Outdoor Rock Concert With 35,000 People In Baltimore, MD -- 13 People Were Injured, Despite The Installed Lightning Rods!

July 1998: 5 Firefighters Were Injured When Lightning Struck Their Firetruck In Las Vegas, NV.

25 October 1998: Lightning Injured 11 Soccer Players In Johannesburg, South Africa.

27 October 1998: Lightning Killed 11 Soccer Players In Congo, Africa, Apparently Via A Ground Streamer, Rather Than A Direct Strike.

1 August 2000: 18 People (17 Kids And 1 Adult) In Houston, TX Were Hospitalized By Lightning. The Adult Led The Kids Under His Care Under A Tree To Keep Dry During The Thunderstorm.

29 August 2000: A Herd Of 56 Elk Was Killed By a Single Lightning Flash In Colorado, Some Over 100 Feet From Where The Lightning Struck The Ground.

3 January 2001: 3 Prisoners Were Killed, Over 20 Hospitalized, And More Injured, In Lusaka, Zambia, When 2 Lightning Flashes Struck Their Group Returning From An Outside Work Detail.

7 July 2001: 6 People Were Injured By Lightning In Rogaland, Norway (1 On A Beach, 5 On An Outlook Point). Although Lightning Casualties Are Less Frequent, Even High Latitude Locations Have Lightning Hazards!

30 July 2001: 6 Baseball Players Were Injured As They Improperly Sought "Shelter" From A Thunderstorm In A Dugout.

8 August 2001: 2 Construction Workers In Fairview, TN Were Injured By Lightning While Laying Cooper Water Lines And Wiring Even While Under The House.

12 August 2001: In Guatemala, 2 People Were Killed And 10 Seriously Injured During A Soccer Game By Lightning. Some Were Leaning Against A Metal Guardrail.

2 September 2001: 1 Caper Was Injured, And Another Killed By Two Separate Lightning Incidents In San Diego County. Even Areas With Little Lightning Activity Have Lightning Hazards!

6 September 2001: 6 Teenagers Were Killed In A Soccer Game By Lightning In Mexico City. At Least Some Were Leaning Against A Metal Railing, When Lightning Struck Some Distance From Them, But The Metal Railing conducted The Electricity To Them.

26 Nov 2001: 5 People Were Killed And Over 100 Injured By A Lightning Strike At A Soccer Game In Malawi, Africa. This May Be The Record Number Of Casualties From A Single Lightning Strike Ever Recorded. Though Not Reported, We Suspect There Was A Crowd Pressed Against A Metal Fence Or Guardrail, Or In Metal Bleachers, So That When Lightning Struck, The Metal Conducted The Electricity To A Large Number Of People.



## 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.