


Lightning Safety Guidelines and Event Safety Plan

Seek Safe Shelter Sooner and Remain There Longer

While your chance of being struck by lightning in your lifetime is estimated at 1 in 5,000, it is much better than winning the lottery. Participating in high-risk outdoor activities when lightning approaches can increase you odds of a lightning experience. You can significantly reduce your risk by practicing these guidelines

YES !

It's okay to ask your outdoor event planner about their safety plan for lightning.

ASK !

The Coach - The Referee - The Umpire - The Administrators
The Parents - The Event Planner or the Sponsor

See Page 8 Event Safety Plan

Warning Guidelines

When to implement a lightning safety rule is directly connected with your ability to warn of an unsafe condition regarding lightning. There are a number of methods available to help you decide on an unsafe condition.

(1) The first is an early warning device that can warn of an unsafe condition. The Thor Guard Lightning Warning system measures the charge build up from the cloud to warn of the danger. This approach does not depend on a previous strike as a reference and can warn you when the first strike is about to happen. See http://www.thorguard.com/ for additional details on this early warning device.

(2) The second warning approach is your eyes and ears.

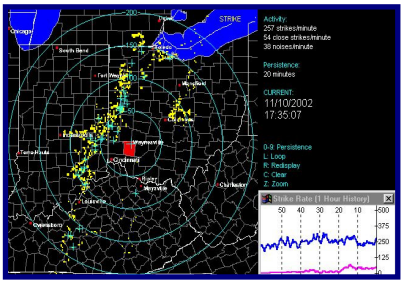
If you see lightning stop your outdoor activity and seek safe shelter.

Lightning can travel much further than you can see and if you see lightning, you are in danger.

If you hear thunder immediately stop your outdoor activity and immediately seek shelter.

The sound of thunder dissipates rapidly in the atmosphere. Lightning can be dangerously close yet the sound of its thunder may cause you to think that it is a considerable distance.
When you hear thunder you are in immediate danger.

(3) The third warning approach is to take advantage of the lightning detection technology available via the internet or TV. Many sources provide a real time lightning display map for your area. Use an at-home-observer to monitor the display map and call on-site personnel about an approaching storm containing lightning.



Real Time Lightning Display Map for SW Ohio
LighttningTalks.com

When to resume activities

Remain in your safe location for 30 minutes after the last sight of lightning or the last sound of thunder. If you are in an area that uses the Thor Guard Lightning Detection and Warning System, wait until you hear three short blasts from the horns and the strobe light extinguishes, indicating a safe return to activities.

The 30/30 Rule (NOT RECOMMENDED)

The 30-30 rule is being phased out because we would rather see you count inside a structure, not outside. The first 30 has been replaced with ‘When thunder roars go indoors’ and the second 30 with ‘and stay there for 30 minutes after the last sound of thunder or sight of lightning’.

After The Strike "Seconds Count"

- When you experience a close strike you will hear a loud crack sound and you may see the bright light of the flash. When the strike is within 20-50 feet, you need to immediately do two things. First check that everyone is alive. If the magnetic field from the strike synchronizes with the hearts T-wave, the heart can stop. Check everyone from babies to the elderly. The magnetic field doesn't discriminate and in general, you can't feel the magnetic field.

  If breathing and/or pulse are absent, immediately begin CPR. Even if the brain wasn't damaged by the energy of the strike, permanent brain damage can occur after about 4/12 to 6 minutes of oxygen starvation to the brain. It is very important to immediately get the 911 response agency in route. Begin CPR and know how to locate and use your AED. See the first aid section on page 7.

- Secondly, take a look in your attic and see if it's on fire. A lightning strike to the roof of a residential structure can easily flame the inside of the attic without your knowledge. Fire doubles in size about every 30 seconds* and precious seconds count. A two minute delay in response could mean the fire is 8 times larger. It may not be obvious that your attic is on fire until fire begins dropping from the ceiling, possibly trapping you inside the structure or your neighbors call and comment that the moisture on your roof is steaming.

Installing a smoke detector in the attic is a good idea but the problem is that smoke detectors are not designed to operate in the extreme temperature ranges of the attic. Typical temperatures can reach a high of 175 degrees and a low of whatever is your low outside winter temperature. A typical temperature range for a smoke detector can be 32 degrees F to around 130 degrees F, clearly not suited for the typical attic. NFPA (National Fire Protection Association) has no guidelines to help us out here.

Having said that, many of us have used a combination photoelectric and ionizing detector in the attic with considerable success. Locating the sounding device in the living area is also a good idea. To facilitate changing the battery with minimal effort you could locate the detector directly over the access point to the attic. Remember, change your clocks - change your smoke/fire detector battery.

* This rate varies and depends on fuel supply, oxygen supply, containment, and other site specific conditions.

Safety Guidelines for your consideration:

- No location outdoors is safe from lightning! **Again:** No location outdoors is safe from lightning!
- Develop your safety plan prior to the event and designate someone responsible for the event safety. (See Event Safety Plan on Page 7)
- Each individual is ultimately responsible for his or her own personal safety.
- Adults must take responsibility for the safety of children and pets in their care during thunderstorms.
- At the first sign impending danger immediately implement your "Safety Plan"
- Move quickly to a safe location, preferably a "Lightning Safe Shelter", or a hardtop metal vehicle with the windows rolled up. Move to the center of the vehicle, do not touch any metal and stay off the 2-way radio connected to an outside antenna.
- Stay off a PlayStation® and similar devices and off a corded phone inside or outside a structure. It's okay to use a cell phone or portable phone inside a structure but never outdoors when there is a threat of lightning.
- Remove metal from the body like watchbands, necklaces, bracelets, earrings, barrettes, rings, chains, belts and a bra containing an under-wire. Encourage the use of sports bras that contain no metal. Body metal is dangerous for two reasons. The first is that any jewelry that is formed in a full circle (a closed loop like a ring, necklace or bracelet) acts as a *magnetic antenna* for the magnetic pulse from the lightning strike. This will cause the metal to become red hot when lightning strikes near by (typically 20-50 feet) and it can burn deep into the skin. The second reason is that any metal on the body increases the risk of being hit by lightning.
- Don't touch anything that could conduct electricity.
- Concrete is highly conductive to lightning. Avoid concrete roofs and bridges, roads, driveways, sidewalks, buildings, patios and airport runways. The high temperature of the lightning bolt causes the concrete to explode sending chunks of concrete in all directions.
- Avoid water. Water can transmit current 600 feet from a distant lightning strike exposing swimmers, boaters, and fishermen to risk.

Sporting Event

- Trees and open shelters found on and around sporting events offer no protection from lightning and, in fact, are quite susceptible to a lightning strike.
- Get far away from the goal post, scoreboard. metal fences around ball parks, backstops, dugouts with metal roofs, metal seating, metal signs, light pole, flag pole
- Get far away from the golf cart, the metal cup on the tee, the ball washer or signs on metal post.
- When lightning is a threat, throw your golf clubs on the ground and far away from you.

Boating

- If caught on the open water during a lightning storm go below deck if possible and avoid metal objects.
- Stop using metal antennas like fishing poles, outriggers, umbrellas and pet leashes.
- Properly ground your boat for lightning.
- Water can transmit current 600 feet from a distant lightning strike exposing swimmers, boaters, and fishermen to risk.

Indoor

- Keep people and pets away from all metal, particularly the top level bathroom, the kitchen, the laundry room, plumbing, heating ducts & vents, electrical outlets, electrical appliances, phone lines, ceiling fans, TV, windows, metal door, fireplace, chimney, metal radiators, wood stove, computer, hair dryers, electric toothbrushes, or electric razors.
- Don't touch anything that could conduct electricity.
- Unplug appliances before a storm nears – **never during.** Unplug the phone line from the computer because the majority of computer failures arise from lightning traveling to the computer via the phone line, not the power line.

Outdoor

Nowhere outdoors is safe from the danger. However, some locations are more dangerous than others. You may already know that standing under a tree is dangerous but did you know that 60 feet or more from the tree is lethal? Should lightning strike a tree, a metal flag pole, a street light pole or other tall isolated object the energy from the strike distributes on the surface of the ground at the base of the tall object and remains lethal for a minimum of a 60 foot radius. Beyond 60 feet may not be lethal but can cause life long injuries if you choose to stand in this area. Did you also know that standing in water such as a pool, a lake or the ocean is lethal for 600 feet from a lightning strike?

- Close all windows, move to the center of a hardtop vehicle, do not touch any metal and stay off the 2-way radio connected to an outside antenna.
- If no buildings or metal vehicles are available, your best protection is a cave, ditch, canyon, or low ravine, but watch for flooding.
- When in a group and in the open, spread out, keeping people several yards apart.
- Avoid flammable materials in open containers. If open, close them up!
- Avoid all refueling. Completely avoid gas stations. Never fill a vehicle's gas tank during a storm.
- Avoid open metal vehicles such as a motorcycle, a bicycle, a golf cart, a lawn mower, an ATV, a tractor, farm equipment or a convertible automobile.
- Avoid standing underneath or beside a tree, road sign, telephone pole, electrical pole, light pole, flagpole, radio tower, monument or metal ladder. Should lightning strike a tree, a metal flag pole, a street light pole or other tall isolated object the energy from the strike distributes on the surface of the ground at the base of the tall object and remains lethal for a minimum of a 60 foot radius. Beyond 60 feet may not be lethal but can cause life long injuries if you choose to stand in this area.

Outdoor Continued

- Avoid open areas like the beach, parking lots, open water, swimming pool (indoors and outdoors), the golf course, athletic fields, recreational parks, stadiums and picnic areas.
- Avoid being the tallest object by projecting above the surrounding landscape. Examples include standing in an open field (sports field, stadium or golf course), riding horseback, a hill top, or a mountain top.
- Avoid standing in small isolated sheds or other small structures in open areas.
- Avoid metal antennas like telephones, fishing rods, golf clubs, umbrellas, pet leashes, clothes lines, metal fences, power lines, pipelines, structural steel fabrication, railroad tracks, metal pipe, plumbing, metal gutters and down spouts. These make great antennas for the electrical field of a near by strike.

Pets & Farm Animals

- You are responsible for your animals, they cannot protect themselves.
- Do not leave your pet outdoors during a lightning storm. They are particularly susceptible to step-voltage from a near-by lightning strike.
- 80% of accidental outdoor animal deaths occur from lightning.
- Replace metal collars and metal leashes with a non conductive material.
- Do not chain an animal to a tree during a lightning storm or attach to a metal exercise wire.
- Provide a lightning safe shelter for your pet(s) and farm animals

Keep a Perspective

It is quite difficult to obtain complete safety from lightning. In an effort to provide a perspective on this the list below is organized into steps of descending safety where 10 is best. This rating is from the 45th weather squadron for the Air Force. Mr. William P. Roeder, Chief Staff Meteorologist

- Lightning Certified Safe Shelter, Rating = (10)
- Lightning Protected Building, Rating = (9)
- In the center of a lower level large enclosed substantially constructed building containing electrical and/or plumbing and away from all connections to the outside. Rating = (7)
- A hardtop enclosed metal vehicle with the windows rolled up such as car, bus, airplane, train, tractor or camper. Rating = (3)
- Outdoors, Rating = (0)

First Aid (Treat the Dead First)

- Specific medical advice should be obtained through consultation with a physician or other trained health care practitioner.
- Immediately call 911 and/or send someone for help.
- If the scene is considered safe, you can immediately begin treating the victim. No residual electrical charge remains after the strike.
- Normal triage recommends that you treat the living first. Triage is opposite for lightning.
  Treat the dead first. A high percentage of lightning victims can be revived. If breathing is absent, respiratory arrest, then begin cardiopulmonary resuscitation with a combination of mouth-to-mouth rescue breathing and external cardiac compression, aka CPR. You can't do CPR for ever and to restart the heart often requires the use of an AED (Automated External Defibrillator). Know where your AED is located and how to use it.
- Others may be stunned or otherwise injured and also need attention. Check for burns, especially at fingers, toes, next to buckles and body metal (jewelry).
- Give first aid for shock.
- Do not let the victim walk around. Stay with the victim until help arrives.
- The Red Cross first aid course provides excellent instruction on how to provide aid to a person who has been struck by lightning.
- Lightning injuries receive less attention than lightning deaths. The survivors are often the untold casualties of lightning strikes. Less than 12% of the lightning that strikes people is fatal; however, approximately 70% causes long-term medical problems.
- Lightning injuries are not well understood by the general medical community and many symptoms can be delayed until long after the strike has passed. It is important that you encourage survivors and their doctors to contact LSESSI.

Lightning Strike & Electric Shock Survivors International
P.O. Box 1156
Jacksonville, North Carolina 28541-1156
Phone & Fax #: 910-346-4708
E-mail: LIGHTNING1@CC.RR.COM

Who is the lightning spotter?

Use multiple spotters. Both on-site and at-home spotters provide an extra measure of safety by keeping a weather eye on the sky watching for the threat of lightning and other severe weather. At home spotters can watch a real-time southwest Ohio lightning map and call on-site personnel to provide an early warning that a storm containing lightning is approaching, say within 30 miles. On-site spotters should pay much more attention to the threat of lightning than the threat of rain.

What warning devices to use?

- Check the weather forecast 24 hr in advance and during the activity using your NOAA all hazards radio, AM-FM Radio or TV.
- Lightning Detection Map (Watch a real-time Southwest Ohio lightning map)
- Thor Guard Lightning detection and warning system is recommended. A hand-held personal lightning detector is not recommended and should not be used as a warning device
- Your Eyes & Ears (If you see lightning, seek shelter or if you hear thunder, seek safe shelter immediately)

What safety rule will stop the activity?

- How much early warning do you require for the orderly movement of people to their safe shelter?
- How many people go where?

Where will you seek safe shelter?

- **Vehicle** Are there a sufficient number of vehicles to hold everyone? Often people are dropped off for the event and an insufficient number of vehicles remain as a safe shelter.
- **Building** Is the event on a weekend or in the evening when the buildings are locked?

How will you get to the safe shelter?

- What is the safest path to the shelter? Are you required to walk near the base of a cell-phone tower, a flagpole, a goalpost, a scoreboard or other tall object that may be a target for lightning? If this condition exists look for a safer path to your safe shelter. A strike to a tall object like a flagpole can redistribute the energy across the surface of the ground at the base of the tall object making it very dangerous to be there, even deadly.

Where to go inside the safe shelter?

- **Vehicle** Close all windows, move to the center of a hardtop vehicle, do not touch any metal and stay off the 2-way radio connected to an outside antenna.
- **Building** Go to the center of the lower level of a substantial structure containing plumbing and/or electrical wiring. Avoid contact with any metallic connection to the outside such as plumbing, electrical, showers, bathrooms, kitchen, laundry room, cable-TV and corded telephones. Prevent people from using a corded phone. If telephone use is necessary encourage a portable phone or cell phone used on the lower level of the structure. Telephone lines present a good antenna for electrical pickup from the magnetic field of a nearby lightning strike in addition to the susceptibility of a direct strike.

When to resume the activity?

- After the signals have blown (ThorGuard Lightning Warning System)
- 30 minutes after the last sight of lightning or sound of thunder.