



Lightning Safety and Outdoor Sports Activities

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Safety
National Program

It's a common situation — a thunderstorm is approaching or nearby. Are conditions outside safe, or is it time to head for safe place? Not wanting to appear overly cautious, many people wait far too long before reacting to this potentially deadly weather threat.

Anyone who is outside in the summer needs to understand some basic information about lightning. Each year, thunderstorms produce an estimated 20 to 25 million cloud-to-ground lightning flashes in the United States — each one of those flashes is a potential killer. Some of those flashes strike directly under the storm where it is raining, but some of the flashes reach out away from the storm where people perceive the lightning threat to be low or nonexistent, and catch people by surprise.

Based on cases documented by the National Weather Service in recent years, about 30 people are killed by lightning each year and hundreds more are injured, some suffering devastating neurological injuries that persist for the rest of their lives. About two thirds of the deaths are associated with outdoor recreational activities.

Officials responsible for sports outdoor activities need to understand thunderstorms and lightning to make educated decisions on when to seek safety. Without this knowledge, officials may base their decisions on personal experience and or a desire to complete the activity. Unfortunately, decisions based on past experience or a desire to complete the activity can put the lives of those involved at risk.

For organized outdoor activities, the National Weather Service recommends that organizers have a lightning safety plan and follow it without exception. The plan should give clear and specific safety guidelines to eliminate errors in judgment. These guidelines should address the following questions.

- When should activities be stopped?
- Where should people go for safety?
- When should activities be resumed?
- Who should monitor the weather and make the decision to stop activities?
- What should be done if someone is struck by lightning?

Before an activity or event, organizers should listen to the latest forecast to determine the likelihood of thunderstorms. There are many good sources of up-to-date weather information including NOAA Weather Radio. If thunderstorms are forecast, organizers should consider canceling or postponing the activity or event. In some cases, the event can be moved indoors. Once people start to arrive at an event, the guidelines in the lightning safety plan should be followed. Officials should monitor weather conditions, weather radar, and lightning detection technology for developing or approaching storms. Below is some information to consider when making a lightning safety plan. In addition, NOAA has developed [lightning safety toolkits](#) for organizations and venues to use in making a plan. Below are some of the considerations in making a lightning safety plan.

When should activities be stopped?

In general, a significant lightning threat extends outward from the base of a thunderstorm cloud about 6 to 10 miles. It's important to account for the time it will take for everyone to get to safety. Here are some criteria that could be used to stop activities.

- **If you see lightning.** The ability to see lightning varies depending on the time of day, weather conditions, and obstructions such as trees, mountains, etc. In clear air, and especially at night, lightning can be seen from storms more than 10 miles away provided that obstructions don't limit the view of the thunderstorm.
- **If you hear thunder.** Thunder can usually be heard for a distance of about 10 miles provided that there is no background noise. Traffic, wind, and precipitation may limit the ability to hear thunder to less than 10 miles. If you hear thunder, though, it's a safe bet that the storm is within ten miles.
- **If the skies look threatening.** Thunderstorms can develop directly overhead and some storms may develop lightning just as they move into an area.

Where should people go for safe shelter?

There is no place outside that is safe when a thunderstorm is in the area. Stop the activity immediately and get to a safe place immediately. Substantial buildings with wiring and plumbing provide the greatest amount of protection. Office buildings, schools, and homes are examples of buildings that would offer good protection. Once inside, stay away from windows and doors and anything that conducts electricity such as corded phones, wiring, plumbing, and anything connected to these. **Note that small outdoor buildings including dugouts, rain shelters, sheds, etc., are NOT SAFE.** In the absence of a substantial building, a hard-topped metal vehicle with the windows closed provides good protection.

When should activities be resumed?

Because electrical charges can linger in clouds after a thunderstorm has seemingly passed, experts agree that people should wait at least 30 minutes after the last thunder before resuming outdoor activities.

Who should monitor the weather and make decisions?

Lightning safety plans should specify that someone be designated to monitor the weather for lightning. The lightning monitor should **not** be the coach, umpire, or referee, because these people will be busy and can't adequately monitor conditions. The lightning monitor must know the plan's guidelines and be empowered to assure that the guidelines are followed.

What should be done if someone is struck by lightning?

Most victims can survive a lightning strike; however, they need immediate medical attention. Call 911 for medical help. Victims do not carry an electrical charge. In many cases, the victim's heart and/or breathing may have stopped. CPR or an AED may be needed to revive them. Continue to monitor the victim until medical help arrives. If possible, move the victim to a safer place inside away from the threat of another lightning strike.

More information:

[Lightning Safety for You and Your Family](#) brochure

Local lightning or weather safety information: contact the nearest [National Weather Service](#) Office near you.