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## Lightning Safety at Your Sports Facility

### Lightning Facts

Lightning is a rapid discharge of electrical energy in the atmosphere. The resulting clap of thunder is the result of a shock wave created by the rapid heating and cooling of the air in the lightning channel. Lightning can heat its path through the air to 5 times hotter than the surface of the sun.

Lightning is one of the nation's deadliest weather phenomena. Summer is the peak season for lightning, but it can strike year round. Lightning can strike more than 10-15 miles from the center of a thunderstorm, which can be outside the rain or thunderstorm cloud. A common myth about lightning is that it never strikes the same place twice. In reality, lightning often strikes the same place repeatedly if it is a tall, isolated object. Height, pointy shape, and isolation are the dominant factors that control where a lightning bolt will strike.



On average, 55 people are reported killed each year and hundreds of people are permanently injured each year by lightning. People struck by lightning can suffer from long-term, debilitating symptoms, including memory loss, attention deficits, sleep disorders, chronic pain, numbness, dizziness, stiffness in joints, and more. Many of these incidents can be avoided if proper precautions are taken.

### Lightning Safety

No place outside is safe when thunderstorms are in the area. If you hear thunder, lightning is close enough to strike you. You can determine the distance of a lightning strike by counting the number of seconds from when you see the lightning flash until you hear the thunder. Every 5 seconds equals one mile. A good lightning safety motto is "If you can see it (lightning), flee it; if you can hear it (thunder), clear it."

When you hear thunder or see lightning, you should immediately move to a safe shelter, which can be a safe building or vehicle. A safe building is fully enclosed with a roof, walls, and floor. Avoid small sheds or partial shelters such as pavilions. Most cars are safe from lightning because of the metal roof and metal sides. Convertibles and vehicles that have a fiberglass shell offer no protection from lightning. When lightning strikes a vehicle, it goes through the metal frame and into the ground. The National Weather Service recommends the following once you have reached a safe shelter:

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- Stay off corded phones, computers, and other electrical equipment that puts you in direct contact with electricity. Lightning could strike exterior power or phone lines, inducing shocks to inside equipment. Cell phones and cordless phones may be used.
- Avoid plumbing, including sinks, baths, and faucets. Do not take a bath or shower during a thunderstorm.
- Stay away from windows and doors, and stay off porches. Windows are hazardous because wind during a storm can blow objects into the window, or in older homes, although rare, lightning can come in the cracks in the sides of windows.
- Do not lie on concrete floors or lean against concrete walls.
- Follow the 30-30 rule. Seek shelter if the time between the lightning flash and rumble of thunder is 30 seconds or less. Stay in safe shelter at least 30 minutes after you hear the last clap of thunder.

There is little you can do to substantially reduce your risk if you are outside in a thunderstorm. No place outside is safe when lightning is in the area. However, if caught outside without a safe shelter nearby:

- Immediately get off elevated areas such as hills.
- Never lie flat on the ground. Lying flat increases chances of being affected by potentially deadly ground current. If you are caught in an open space, crouch on the balls of your feet with feet close together. Stay tucked as low as you can without touching your knees or hands to the ground.
- Never use a tree for shelter. Seek cover in clumps of bushes.
- Immediately get out and away from ponds, lakes, and other bodies of water.
- Stay away from objects that conduct electricity, such as power lines or fences.
- Find a low spot away from trees, metal fences, pipes, or tall, long objects. If you feel your hair standing on end and/or hear crackling noises, you are in lightning's electric field. Immediately crouch down and stay tucked low without touching your knees or hands to the ground.



### Safety at Sports Facilities

Large venues should comply with the following to protect staff, users, and patrons:

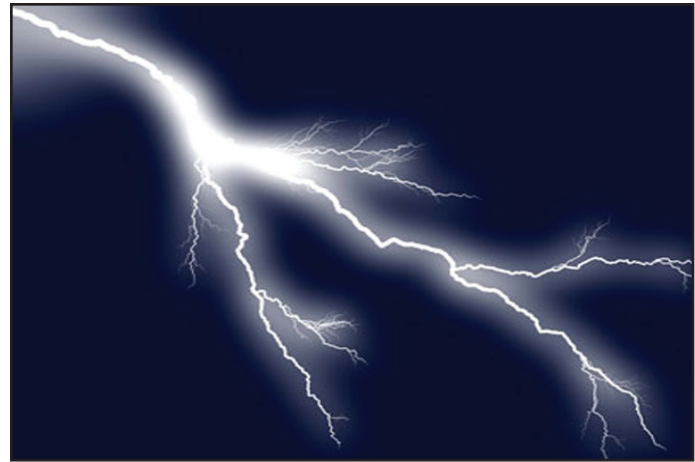
#### For staff

- All staff should know the facility's lightning safety plan and warning program. Lightning danger warnings should be issued in time for everyone to get to a safe location.
- Pay attention to daily forecasts. Facility staff should monitor local weather by television, internet, or commercial services. Stay alert for signs of thunderstorms such as high winds, dark clouds, rain, and distant thunder and lightning.
- If a thunderstorm is threatening, do not start a new task that cannot be easily stopped.
- Stay off and away from anything tall such as rooftops and trees. Stay off and away from large equipment such as backhoes and tractors.
- Do not touch materials or surfaces that can conduct electricity such as metal, equipment, water, and utility lines.

# Lightning Safety at Your Sports Facility

For users and patrons

- The facility should have a lightning safety plan in place for severe weather events. The plan should include evacuation and safety measures. Know where people will go for safety and how long it will take for them to get there. Have specific guidelines for suspending the event or activity so everyone has time to reach safety. Have written instructions on how to contact local emergency management and the National Weather Service. Follow the lightning safety plan without exception.
- On days of events, all responsible staff and officials should be aware of the lightning safety plan.
- A responsible person should be specifically designated to monitor weather conditions and lightning dangers. Local weather forecasts from The Weather Channel, NOAA Weather Radio, or local TV stations should be observed 24 hours prior to and during athletic events. A portable weather radio or AM radio can be used to obtain timely storm data. Using an AM radio can be helpful because static discharge from nearby lightning strikes will be heard on AM radio reception.
- A locally-run lightning detection system or subscription to commercial notification system can notify facility managers when severe weather is imminent. If using a commercial notification system, be sure to ask the provider about problems with notification timing. Often a notice will be sent out to many customers simultaneously. Depending on the infrastructure, the notification may take a while to reach the person who needs it the most.
- When lightning is spotted or thunder is heard, an emergency plan can be activated. Patrons should immediately be moved to a safe building or vehicle. Partially enclosed vending areas and picnic shelters are not safe. If no safe shelter is available, keep patrons away from the tallest objects, metal objects, water bodies, and open fields.
- Several methods, such as a public address system, internal broadcast, or message alerts can be used to notify patrons of lightning.
- Activity can resume 30 minutes after the last clap of thunder and no detected lightning strikes.
- Consider postponing activities and events if thunderstorms are in the forecast.



## First Aid for Lightning Victims

Victims of a lightning strike do not carry an electrical charge. Call 911 and seek immediate medical attention. Individuals struck by lightning may appear dead with no pulse or breath. Often a person can be revived with CPR or AED. Common injuries of lightning victims include burns, wounds, and fractures.

Outdoor sports have the fastest rising lightning casualty rate. Therefore, keeping staff, users, and patrons safe during thunderstorms is of utmost importance. Storm monitoring, lighting warning systems, lightning safety plans, and educating staff and the public are essential to promote safety and awareness during activities and events. For access to National Weather Service advisories, watches, warnings, and hazardous weather outlooks, visit [www.weather.gov](http://www.weather.gov) and enter information for your location. Thunderstorms and severe weather forecasts are online at [www.spc.noaa.gov](http://www.spc.noaa.gov).

### Resources

- <http://www.lightningsafety.noaa.gov/>
- <http://www.health.state.ny.us/environmental/emergency/weather/lightning/>
- <http://www.sportssafety.org/articles/lightning-safety-game-plan/>
- [http://www.lightningsafety.com/nlsi\\_pls/ncaa.html](http://www.lightningsafety.com/nlsi_pls/ncaa.html)