



Loss Control Department  
*Technical Information Paper Series*

# Lightning Prevention and Protection

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# Lightning Prevention and Protection

## ***What is Lightning?***

*Lightning* is the atmospheric discharge of electrical energy from one charged area to another area of different charge. This current flow can occur between cloud and cloud, or between the earth and a cloud. During the initial lightning flash, current flows exceed 140,000 amperes 99 percent of the time, with multiple strokes of reducing current flow intensity.

Lightning causes property damage directly from the hit and through induced electrical surges; it can also start fires. Parts of a structure most likely to be struck are chimneys, flagpoles, towers, deck rails, or other objects that project above the surrounding area. On buildings which have flat roofs, the roof edge is most likely to be struck. Lightning is also a very serious personal threat.

Lightning protection is accomplished by providing the means by which a lightning strike can enter or leave the earth (for example, through a lightning rod) without causing property damage or loss of life. The path must be of low impedance so that excessive heat is not generated; this heat can start fires.

## ***Emergency Preparedness: Before Lightning Storms***

- Establish an Emergency Preparedness Plan (EPP) that takes prevention, emergency response, and disaster recovery into consideration. If an EPP is already in place, review and update it as needed for lightning readiness.
- Designate an Emergency Coordinator and an EPP Team. Assign responsibility to specific employees for advance arrangements to initiate the plan.
- When a severe storm is approaching, listen to the radio or TV for updated weather information. An AM radio is sensitive to electrical disturbances that are detected by background static. This static will alert people that there is an electrical storm in the area.
- Consider installing a lightning protection system that is capable of intercepting a lightning strike and conducting it to ground.
- Install lightning arrestors on incoming telephone and power lines to protect against electrical surges generated by lightning.
- Install surge protectors to protect electronic equipment from electrical surges generated by lightning.
- Educate people about the hazards of lightning and stray extraneous electrical current flows.
- Have people trained to administer CPR if someone is hit by lightning.

### ***Emergency Response: During Lightning Storms***

- When the storm approaches, it becomes a personal threat to anyone outside the lightning-protected area. Seek shelter in a substantial building. Avoid metal-roofed buildings.
- Discontinue any wet operations where people come in contact with wet or highly conductive environments.
- If you are caught outside, avoid high areas. Do not stand near open water, metal fences, wire, or other horizontal conductors. Do not stand near trees, poles, flagpoles, or other vertical conductors. Put down metal tools, golf clubs, or poles.
- If, during the storm, your hair stands on end, drop to your knees, bend forward, and place your hands on your knees. Do not lie flat on the ground.
- If someone is hit by lightning and loses consciousness, start CPR. Once consciousness is regained, seek medical help immediately. Anyone who is stunned by lightning, even if consciousness is not lost, should also seek medical help.

### ***Emergency Recovery: After Lightning Storms***

- Check the area for fires and/or electrical damage that may have occurred.
- Inspect the lightning arrest system for any damage that may have occurred from a direct lightning hit. Repair damage.
- Check all main electrical equipment and circuits if a direct hit is suspected, and before energizing equipment that was shut down.

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