Avoiding the Risks of Deadly Lightning Strikes

Lightning is one of the most underrated severe weather hazards, yet ranks as the second-leading weather killer in the United States. More deadly than hurricanes or tornadoes, lightning strikes in America each year kill an average of 73 people and injure 300 others, according to NOAA's National Weather Service.

How Lightning Works
Lightning is caused by the attraction between positive and negative charges in the atmosphere, resulting in the buildup and discharge of electrical energy. This rapid heating and cooling of the air produces the shock wave that results in thunder. During a storm, raindrops can acquire extra electrons, which are negatively charged. These surplus electrons seek out a positive charge from the ground. As they flow from the clouds, they knock other electrons free, creating a conductive path. This path follows a zigzag shape that jumps between randomly distributed clumps of charged particles in the air. When the two charges connect, current surges through that jagged path, creating the lightning bolt.

The Warning Signs
High winds, rainfall, and a darkening cloud cover are the warning signs for possible cloud-to-ground lightning strikes. While many lightning casualties happen at the beginning of an approaching storm, more than 50 percent of lightning deaths occur after the thunderstorm has passed. The lightning threat diminishes after the last sound of thunder, but may persist for more than 30 minutes. When thunderstorms are in the area, but not overhead, the lightning threat can exist when skies are clear.

Safety Precautions
While nothing offers absolute safety from lightning, some actions can greatly reduce your risks. If a storm is approaching, avoid being in, or near, high places, open fields, isolated trees, unprotected gazebos, rain or picnic shelters, baseball dugouts, communications towers, flagpoles, light poles, bleachers (metal or wood), metal fences, convertibles, golf carts and water. If you can see lightning or hear thunder, the risk is already present. Louder or more frequent thunder means lightning activity is approaching, increasing the risk for lightning injury or death. If the time delay between seeing the lightning and hearing the thunder is less than 30 seconds, you are in danger.

No place is absolutely safe from the lightning threat, however, some places are safer than others. Large enclosed structures are safer than smaller, or open, structures. Avoiding lightning injury inside a building depends on whether the structure incorporates lightning protection and its size. When inside during a thunderstorm, avoid using the telephone, taking a shower, washing your hands, doing dishes, or having contact with conductive surfaces, including metal doors, window frames, wiring and plumbing. Generally, enclosed metal vehicles, with the windows rolled up, provide good shelter from lightning.

Action Plan For Outside Events
Coordinators of outdoor events should monitor the weather and evacuate participants when appropriate. School buses are an excellent lightning shelter, which outdoor event organizers can provide. Consider placing lightning safety tips and/or the action plan in game programs, flyers, scorecards, etc., and placing lightning safety placards around the area. Lightning warning signs are effective means of communicating the lightning threat to the general public and raise awareness.

First Aid for Lightning Victims
Ninety percent of lightning victims survive their encounter with lightning, especially with timely medical treatment. Individuals struck by lightning do not carry a charge, and it is safe to touch them and provide medical treatment. Call 911 and start mouth-to-mouth resuscitation. If the victim has no pulse, begin cardiac compressions. In cold, wet situations put a protective layer between the victim and the ground to lower the risk of hypothermia.

Lightning Quick Facts

- 25 million cloud-to-ground lightning strikes occur in the United States each year
- The air within a lightning strike can reach 50,000 degrees Fahrenheit
- Lightning can heat its path five times hotter than the surface of the sun
- One ground lightning stroke can generate between 100 million and 1 billion volts of electricity

For more information contact National Weather Service public affairs at (301) 713-0622 or visit NOAA's Lightning Safety Web Site.