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Golf and country club safety solutions

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When Lightning Approaches, Let It Play Through!

Getting struck can ruin your game for all time

Lightning is nature's way of showing us who's boss. During a thunderstorm, lightning can strike up to ten miles away from the rain area. That's about the distance from which you can hear thunder. When a storm is ten miles away, it may be difficult to even tell that a storm is approaching.

The National Weather Service has a few more interesting facts about lightning such as:

- Lightning often strikes the **same place** repeatedly
- Lightning often strikes more than **3 miles from the center of the thunderstorm** - far outside the rain
- Height, pointy shape, and isolation are the dominant factors controlling where a lightning bolt will strike. **The presence of metal makes absolutely no difference on where lightning strikes.**[1]

Two forms of lightning… one is deadly

Lightning is a transient discharge of static electricity that serves to re-establish electrostatic equilibrium within a storm environment. In less than one second, the air is heated to between 15,000 and 60,000 degrees Fahrenheit. Flashes can produce between 100 and one billion volts of electricity and between 10,000 and 200,000 amps.[2]

There are two basic forms of lightning - cloud-to-cloud and cloud-to-ground. During a thunderstorm, each flash of cloud-to-ground lightning is a potential killer. Whether or not a particular flash becomes deadly depends upon whether a person is in the path of the lightning discharge.

What are the odds?

What are the odds of lightning striking someone on your golf facility? It depends on where you're located. Golf courses in Florida have a much higher chance than those in other areas of the country. But regardless of location, your preparations for an electrical storm can improve your odds of having your members or patrons remaining unscathed. But if you think it can't happen, consider this:

- In the five-year period from 2006-2010, lightning killed an average of 36 people annually in the United States. Florida led the way in lighting fatalities, typically followed by Michigan, Pennsylvania, North Carolina and Texas.[3]
- Lightning strikes an average of 8.6 million times a day throughout the world. One death occurs per every 345,000 flashes, one injury per every 114,000 flashes. In the United States, one lighting casualty is likely to occur for every 86,000 flashes.[4]
- The odds of being a lighting casualty in the U.S. are approximately 280,000 to 1. These odds vary according to your geographical location, climate, personal lifestyle and hobbies. For example, in Florida, the odds are much higher - approximately 80,000 to 1. **That means Floridians are 287 times more likely to be struck by lightning than to win their state lottery.**[5]

Is Your Course Protected?

Club members, guests, employees, and other personnel are at risk during a thunderstorm and conditions suitable for lightning. Early warning of lightning in the area is a key to personal safety and prevention of injuries. Golf course management commonly relies on local weather reports and visual identification to determine lightning conditions. However, these methods often do not give adequate advance warning.

Early lightning detection systems offer the ultimate protection for golfers and course owners. These systems detect cloud-to-cloud lightning, which is a precursor to cloud-to-ground lightning strikes. Systems vary from prediction to detection of lightning in a predetermined area. The cost of such systems also varies from hundreds to thousands of dollars.

A number of clubs are reluctant to install lightning prediction/ detection systems due to liability. This asks the question, "Is your club negligent for having or not having a system?" Well, ultimately the courts will decide the degree of negligence, but these systems are effective and required at most professional golfing events. Additionally, testing and maintaining the system in accordance with the manufacturer's guidelines will reduce the risk of liability (which course owners tend to associate with these systems should they fail).

Lighting prediction/detection and notification systems are only effective if the detection area is adequate and notification is heard throughout the course. The course should communicate that a warning device is provided and the expected warnings that will be sounded (e.g. stop play, resume play, etc). Manufacturers and installers will provide the best advice on these details.

Instructions about what the golfer should do in the event of lightning should be prominently displayed in the pro shop, weather shelters, and perhaps even on the scorecards. They should stress that golfers should drive back to the clubhouse when the alarm sounds. If it is not possible to drive that far, golfers should go to the provided shelters.

Clubs that are not equipped with early warning systems should post a warning to players in the pro shop, starter area, golf cart, etc.

- This club has no lightning detection or alarm system
- In the event of inclement weather, leave the course & seek shelter
- Golfers should play at their own risk
- Lightning strikes may cause serious injury

Are Employees Trained and Knowledgeable?

Employees (and golfers) should be well versed in your course's safety procedures. For example:

- Employees should understand warning systems and adhere to club policies to seek safe shelter
- Employees seeking safe shelter should remind golfers to drive back to the clubhouse if the notification system has activated. Consider rain checks in case the round or event is cancelled.
- If returning to the clubhouse is impractical, golfers should know to go to the nearest protected shelter.
- If golfers cannot reach either, they should be instructed to remove their golf spikes, not carry any clubs or umbrellas, and proceed to the nearest low lying area, away from trees.
- An "all clear" siren can be sounded once the storm passes.
- It is also important that employees be trained in emergency response procedures.

Are Your Shelters Adequate?

Once golfers are alerted to stop play and seek shelter, adequate lightning protection is necessary. This often means a protected comfort station or halfway house.

The goal of a lightning protection system is to intercept lightning and safely direct its current to the ground.

Regardless of the comfort station's size or design, lightning protection should be provided. A typical lightning protection system for such a structure includes air terminals (rods), down conductors and ground terminals. These elements must form a continuous conductive path for lightning current, with all connections between the elements typically accomplished by bolting or welding.

The goal of a lightning protection system is to intercept lightning and safely direct its current to the ground. There are several design options. However, even a small shelter should have these basic elements:

- At least one air terminal (or equivalent)
- At least two, but preferably four, down conductors on two diagonally opposite sides of the structure
- Ground terminals connected to the down conductors

During thunderstorms, golfers and course employees should avoid unprotected shelters. Signs should be posted in unprotected shelters indicating that the structure does not offer lightning protection.

Property Preservation

Besides life safety issues, lightning is a loss leader for property damage. Electrical surges created by lightning generate fires, damage electronic equipment and interrupt business operations. Physical protection for buildings requires a three phase approach.

1. Outside building protection such as lightning rods, lightning preventers, dissipaters, etc.
2. Surge protection for incoming electrical & communication lines
3. Individual surge protection for specific equipment

Golf course irrigation systems are particularly vulnerable to damage from lightning strikes and surges. An 18-hole golf course may have miles of electrical wiring throughout the course often terminating at a field controller. Damage can occur from direct strikes or "paths of travel" from a strike hitting a nearby object (e.g. tree, structure, etc). An electrical strike can induce transient surges up to 3 miles away.[7] Minimizing damage can be obtained by grounding and shielding and the installation of surge suppression/arresting devices. An electrical contractor who specializes in lightning protection can provide valuable insight in protecting new and/or existing irrigation systems.

Increasing awareness

The USGA lighting poster, *What to Do When Lightning is Near*, as well as cart decals, remind golfers of the dangers of playing during an approaching storm. Lightning safety tips should be prominently displayed in the pro shop, weather shelters and perhaps even on scorecards.

The National Oceanic and Atmospheric Association (NOAA) has partnered with members of the PGA in developing the *"Lightning Kills, Play It Safe"* campaign. The campaign is designed to lower lightning death and injury rates and America's vulnerability to one of nature's deadliest hazards.

Don't depend on luck alone

In 1991, lightning resulted in fatalities at two PGA events: Hazeltine and the PGA Championship at Crooked Stick. These unfortunate incidents demonstrated the vulnerability of golfers and spectators who are exposed during thunderstorms. It also opened the eyes of many course owners and convinced them to install lightning detection systems.

Golf courses without storm policies, procedures and some form of lightning protection are neglecting the safety of their customers. If a detection/notification system cannot be installed, alternative measures should be taken to protect players.

Of course, some golfers refuse to believe that they could possibly be struck by lighting and must be dragged off the course. Odds are, those are the same dreamers who are confident they hold that winning lottery ticket.

References

1. www.lightningsafety.noaa.gov/myths.htm

2. NOAA (National Oceanic and Atmospheric Administration) "Lightning Safety" http://www.wrh.noaa.gov/reno/pdf_text/publtg.htm

3. http://www.weather.gov/om/hazstats.shtml

4. NWS Melbourne, Lightning Information Center, "Interesting facts, myths, trivia and general information about lighting"

5. NOAA, article: "Lighting Safety Facts" Mr. Roeder/45 WS/SYR/3-8410/wpr/4 May 02

6. Golf Course Lightning Protection, Zurich Risk Engineering Risk Topic 4-9.016

7. Golf course irrigation: environmental design and management practices, By James Barrett http://books.google.com/books?id=ds4KgEZVugIC&pg=PA121&lpg=PA121&dq=lightning+protection+for+golf+course+irrigation+systems&source=bl&ots=XzXas4wTM6&sig=MQiZqCyG9yZEsj6DrwSZzYFoOiI&hl=en&ei=CoXvTajMDYOutwel9bS5CQ&sa=X&oi=book_result&ct=result&resnum=5&ved=0CFYQ6AEwBA#v=onepage&q=lightning%20protection%20for%20golf%20course%20irrigation%20systems&f=false

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