LIGHTNING HAZARD

Online Training

Definition

Lightning is an electrical discharge caused by imbalances between storm clouds and the ground, or within the clouds themselves. Most lightning occurs within the clouds.

"***Sheet lightning***" describes a distant bolt that lights up an entire cloud base. Other visible bolts may appear as bead, ribbon, or rocket lightning.

During a storm, colliding particles of rain, ice, or snow inside storm clouds increase the imbalance between storm clouds and the ground, and often negatively charge the lower reaches of storm clouds. Objects on the ground, like steeples, trees, and the Earth itself, become positively charged creating an imbalance that nature seeks to remedy by passing current between the two charges.

Lightning is extremely hot a flash can heat the air around it to temperatures five times hotter than the sun's surface. This heat causes surrounding air to rapidly expand and vibrate, which creates the pealing thunder we hear a short time after seeing a lightning flash.

The Impact of a Lightning Strike

Lightning is not only spectacular, it's dangerous. About 2,000 people are killed worldwide by lightning each year. Hundreds more survive strikes but suffer from a variety of lasting symptoms, including memory loss, dizziness, weakness, numbness, and other life-altering ailments. Strikes can cause cardiac arrest and severe burns, but 9 of every 10 people survive. The average American has about a 1 in 5,000 chance of being struck by lightning during a lifetime.

Lightning's extreme heat will vaporize the water inside a tree, creating steam that may blow the tree apart. Cars are havens from lightning, but not for the reason that most believe. Tires conduct current, as do metal frames that carry a charge harmlessly to the ground.

Many houses are grounded by rods and other protection that conduct a lightning bolt's electricity harmlessly to the ground.

Homes may also be inadvertently grounded by plumbing, gutters, or other materials. Grounded buildings offer protection, but occupants who touch running water or use a landline phone may be shocked by conducted electricity.

Lightning kills more life than hail, wind, rain and tornadoes combined, making lightning an important safety consideration. This fact is especially true for people who make a living working outdoors. While the odds of getting struck by lightning are less than one in a million, Environment Canada says lightning kills six to twelve people every year in this country and seriously injures another sixty or seventy people.

Knowing what to do when lightning is close is especially important for people who work outdoors (for example, construction workers, road crews, landscapers and farm workers). Employers need to recognize the hazards associated with electrical storms and, where appropriate, have safe procedures and work systems in place, to minimize the risk of injury or harm to employees, and should review these policies seasonally.
Having a preparedness plan and taking some basic safety measures can prevent many lightning deaths and injuries.

What steps should people take to protect themselves?

Protection from lightning begins before the storm. Paying attention to weather conditions and forecasts allows time to plan for threatening weather and to react appropriately.
The safest place to be during a thunderstorm is in a well-constructed building. A well-constructed building is one that is fully enclosed with a roof, walls and floor with electrical wiring, plumbing, telephone line, or antennas to ground the lightning should the building be hit directly.

Even when inside the building, there are safety precautions to take:

- Keep as many walls as possible between you and the outside. Stay away from doors, windows, and fireplaces.
- Stay away from anything that will conduct electricity such as radiators, stoves, sinks and metal pipes.
- Use battery operated appliances only. Avoid handling electrical appliances and regular telephones (cordless phones and cell phones do not increase the risk of a lightning strike).

The next best place for shelter is an enclosed metal car, truck or van but NOT a tractor, golf cart, topless or soft-top vehicle. Make sure the vehicle is not parked near trees or other tall objects that could fall over during a storm. When inside a vehicle during a lightning storm, roll up the windows and sit with your hands in your lap and wait out the storm.

Don't touch any part of the metal frame or any wired device in the vehicle (including the steering wheel or plugged-in cell phone). A direct strike to your car will flow through the frame of the vehicle and usually jump over or through the tires to reach ground.
Be aware of downed power lines that may be touching your car. You are safe inside the car, but you may receive a shock if you step outside.

Unsafe shelters are buildings or structures without electricity or plumbing to ground the lightning, as they do not provide any lightning protection. Shelters that are unsafe include covered picnic shelters, carports, tents, baseball dugouts as well as other small non-metal buildings (sheds and greenhouses).

There is no safe place to be outdoors during a thunderstorm (except in appropriate shelters that are described above). However, there are areas that might be less dangerous, and help reduce the risk of being struck by lightning when outside.

Stay away from things that are tall (trees, flagpoles or posts), water, and other objects that conduct electricity (tractors, metal fences, lawn mowers, golf clubs). You do not want to become a prime target by being the highest object on the landscape. Take shelter in low-lying areas such as valleys or ditches but watch for flooding.

If you are with a group of people in the open, spread out several meters apart from one another. If you get caught in a level field far from shelter, crouch down on the balls of your feet immediately, with feet together, place your arms around your knees and bend forward. Be the smallest target possible, and at the same time, minimize your contact with the ground. Don't lie flat.

What should you do if someone has been hit by lightning?

If you already hear thunder, remember to take shelter from the storm and protect yourself. There are also commercially available personal lightning detection devices that can be carried on a person to help warn about how close a storm is. Preparedness for a storm is essential. Listen to your local forecast for the possibility of thunderstorm activity. Keep an eye on the sky. If the sky suddenly darkens, be prepared to take shelter.
Lightning victims are safe to touch. Bystanders shouldn't hesitate to save a life by calling for help. If breathing has stopped, administer mouth-to-mouth resuscitation. If the victim is not breathing or they do not have a pulse, a trained rescuer should administer cardio-pulmonary resuscitation (CPR).

Subang among top lightning-prone spots in the world

Subang which lies in the center of a lightning dense triangle in the Meteorological Department's map for lightning density has one of the highest number of lightning incidences in the world. According to the department, Subang experiences lightning a minimum of 240 days a year. This translates to between 25 and 40 lightning ground flashes per sq km in the area a year. The reason for the area's proclivity to lightning. Meteorological Department, was its location in a low lying, flat Klang Valley and its concentration of concrete buildings and roads. "With such conditions, strong heating on the surface air tends to occur, which leads to convection activities in the atmosphere. As a result, convective or thunderstorm clouds will form followed by lightning."

Klang Valley records the highest number of lightning in May and October, during the inter monsoon period. In those months, the Malacca Straits experiences hot weather which evaporates water and pushes hot air to cooler areas in the Klang Valley. These water molecules rise up until they form ice crystals and clouds which result in lightning.

Meanwhile, Malaysia have just crossed the year's lightning month with an average 86,000 strikes recorded in peninsula alone. With the monsoon season and more lightning expected this month, experts renewed their calls for better lightning protection. The Klang Valley receives the third highest number of lightning strikes in the world. Scientists consider it the "lightning crown of the world" because it is the most populated and developed of the top three.

Malaysia's Centre for Electromagnetic and Lightning Protection Research (CELP) estimates that Malaysia loses RM250mil in infrastructure damages and business disruptions due to electrical outages from lightning strikes each year. Lightning has killed 224 people and injured 2,000 more in the last eight years in Peninsular Malaysia.

-Daily Express-

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