

# LIGHTNING

MSS Safety

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# Training Program Contents

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# Lightning Accidents

- 2 engineers die while inspecting road construction in south India
- A boy was struck by lightning in a Texas football field but survived
- Parents killed, 3 children injured when they sought shelter under an isolated tree
- 3 men struck by lightning while installing a chain link fence
- 2 caddies die of lightning in a golf course

# Lightning - Facts

- Virtually anything can get struck by lightning!
  - Tree / Animal / Humans / Building / Aircraft / Ship / Bush / Light pole / Process Plant / Crane / Truck
- Lightning strikes are absolutely **UN-PREDICTABLE!!!!**
  - Place of strike / Intensity / Destruction Potential
- Lightning discharges produces very

# Lightning - Facts

- **25% of Lightning victims die!**
- **Lightning damage probability is more in summer**
- **85% of the lightning strike victims are children and young men (10 to 35 years old) engaged in work & recreation (US data)**
- **14 % under tree lightning strike deaths**
- **70% strikes happen between June & August**

# Lightning - Facts

- Most lightning strikes occur between 2 pm to 6 pm.
- **Lightning strikes are UN-Predictable!**
  - **During a football match, one team of 11 were struck by lightning whereas the other team was untouched!**

# Lightning Myth - 1

- Lightning strikes only on tall objects!

But the probability of a tall object getting struck is more! In African animal parks, more **Giraffes** die of lightning than any other animal!

# Lightning Myth - 2

Lightning Never strikes the same place twice!

- EMPIRE STATE BUILDING WAS STRUCK 25 TIMES!!!!



# Lightning Myth - 3

- Standing under a tree during lightning is safe!

# Lightning Myth - 4

You are completely safe inside a metal bodied car!

- Not completely true! So long as you jump out or stay inside, you are safe. **DONOT STEP OUT!** Safest thing to do is not to get into any vehicle.

# UNSAFE AREAS

- Small structures including huts & rain shelters.
- Nearby metallic objects like fences, gates, instrumentation and electrical equipment, wires, and power poles.
- Also---**AVOID** isolated trees, **AVOID** water, **AVOID** open fields, **AVOID** using the (hard wired) telephone and headsets.
- Avoid being in or near high places (tanks / towers / stacks) or open fields or under isolated trees, under communication towers, flagpoles, metal fences, rivers

# UNSAFE AREAS

- When inside a building, avoid use of the telephone, taking a shower, washing your hands, electrical wiring, cable TV wiring, plumbing, being near windows & balconies
- Parking lots / Tennis Courts / Golf Courses / athletic fields / tents & temporary structures
- Near clotheslines, wire fences, overhead wires and rail-road tracks

# SAFE AREAS

- Large metal-framed & enclosed structures
- **Lightning** **protected buildings**
- Fully enclosed metal vehicles, with rolled-up windows (avoid contact with metal surfaces outside or inside the vehicle)
- City Streets shielded by nearby buildings
- Underground shelters such as tunnels, caves
- Seek depressed areas / dense woods
- **Do not go out-of-doors or remain out, unless it is necessary**

# LIGHTNING SAFETY

## CROUCH

- If hopelessly isolated from shelter during close-in lightning, adopt a low crouching position with feet together and hands on ears (**Crouching**).

Maintain lowest possible height

# Lightning Safety Crouch

- SAFEST POSITION DURING THUNDERSTORMS IN THE CROUCHING POSITION!!! (when no shelters are available, in open areas)

# Hair Rising!!!

Individuals who feel their hair standing on end, this is an indication that lightning is about to strike.



# Lightning Safety Rating

- In order of descending safety where 10 is the best
- Lightning Certified Safe Shelter, Rating = (10)
- Lightning Protected Building, Rating = (9)
- Large enclosed substantially constructed building (the center of a low level interior room is better). Rating = (7)
- An enclosed metal car, bus, airplane, train or tractor, Rating = (3)
- The safety crouch position rating = (1/2)
- Outdoors, Rating = (0)

# Lightning *Safe Alert*

- Provides early warning of approaching lightning strikes from as far away as 40 miles
- Cost USD 80/-
- An audible alarm sounds when there's a strike and a corresponding LED light illuminates accordingly at lightning distances of 20-40 miles, 12-24 miles, 6-12 miles and within 6 miles.

# Outdoor Lightning Safety Tips

- If you hear **thunder**, suspend all outdoor activities!
- If you see **Lightning**, seek a shelter immediately!
- **Vehicles:**
  - Cranes - lower boom, stop and driver to jump out of vehicle and move into a shelter
  - All trucks - Drivers to stop work, move into the shelter

# Outdoor Lightning Safety Tips

- Those people who are working at heights - climb down and take shelter in a protected building / room or in the safe areas mentioned
- Avoid unnecessary exposure to lightning (go out only if absolutely essential!!!)
- Depend on the radio to keep updated of weather conditions

# Lightning Pre-Cursors (Warning Signals)

- High Winds
- Heavy Rainfall
- Cloud cover / Cloudy Sky
- Use lightning warning devices

**“Many casualties occur because people ignore these obvious precursors”**

# Components of a Lightning Evacuation Action Plan

- Designate a responsible person to monitor forecasted weather as well as to observe precursors and to initiate evacuation when appropriate
- A protocol to be put in place to notify all persons at risk from lightning threat
- Define the evacuation route
- Identify the shelters / locations to be evacuated to
- All clear & evacuation signals to be identified

# Personal Lightning Safety Program

- Designate a trained **supervisor / head worker** in all the outdoor work areas to execute the action plan.
- Observe the lightning precursors / tune to radio to local AM and listen for a crackling sound
- Follow the defined ***Lightning Action Plan***
- Exhibit outdoor lightning safety tips in the plant

# First Aid

## Recommendations

- Re-locate the victim to a low lightning risk area
- **Start resuscitation, if the victim is not breathing**
- **If no pulse is detected, start cardiac compression**
- **Take to a qualified doctor immediately**

Most lightning victims can actually survive their encounter with lightning, especially with timely medical treatment



Being aware of lightning hazards itself is a big step towards **lightning safety!!!!**