

Chapter 15: Some Natural Phenomena

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- Two naturally occurring destructive phenomena: lightning and earthquakes

1) Static charge:

- The type of electrical charge produced when two materials (either positively charged or negatively charged) are rubbed together is called static electrical charge.
- This mainly occurs due to transfer of electrons.
- This type of charge does not move.
- Examples:
 1. When amber is rubbed with fur, it attracts light objects such as hair
 2. When a plastic refill is rubbed with polythene, it acquires a small electric charge.
 3. When a plastic comb is rubbed with dry hair, it acquires a small charge.
- CHARGED OBJECT: These are objects who have acquired a charge, on account of rubbing
- There are two types of charges:
 - a) Positive charge
 - b) Negative charge
- Another important property of electric charge is that like charges repel each other whereas unlike charges attract each other. Following are some examples to understand this property:
 - a) A charged balloon is repelled by another charged balloon. Similarly, a charged refill is repelled by a charge refill. But on the contrary, a charged balloon is attracted by a charged refill.
 - b) It is a convention to call the charge acquired by a glass rod when it is rubbed with silk as positive. The silk will be having a negative charge.**
- Charge transfer: Electrical charge has the capability to get transferred to another charged object via a metallic conductor.
 1. Electroscope: A device used to test whether an object is possessing any charge or not.
 2. Discharging: The process by which an object loses the charge present on it.
 3. Earthing: When a charged object transfers its charge to the earth it is called earthing. It is important as it protects the buildings from shock in case of current leakage.

2) Lightning:

- Lightning is caused by the accumulation of charges in the clouds.
- Usually there is separation of charge as the air currents move upward and water droplets move downwards.
- Due to this process positive charge is accumulated near the ground as well as near the top edge of the cloud. The negative charge accumulates near the bottom edge.
- As the magnitude of the charges on the clouds increase's, air (normally a bad conductor of electricity) allows the flow of electric charge.

- As the two opposite charges meet, they produce streaks of light and sound.
- Electric discharge: the transfer of charge from cloud to another or to the earth on account of separation of charge is called electric discharge.
- Preventive measures:
 - When present outside: Open vehicles, cars, fields, tall trees, shelters are not safe. Carrying umbrellas during thunderstorm's is not advisable. If a person is in a forest take shelter under small trees. In open fields stay away from large trees, poles and other metal objects. Never lie on the ground, instead take a squat position with your hands on the knee and head between hands.
 - When present inside: avoid using wired telephones, unplug electrical appliances like televisions and computers. Avoid bathing
- Lightning Conductors:

A device which protects buildings from lightning. It is made up of a metal rod which is taller than the building and is installed in the building during construction. It provides earthing for the building.

3) **Earthquakes:**

- Earthquakes is sudden trembling and shaking of the tectonic plates due to disturbance deep inside the crust.
- It causes loss of life and property on a large scale.
- It lasts for a very short period of time.
- Crust: the uppermost layer of the earth. It is fragmented. And each fragment is called a plate.
- Such tremors can lead to other disasters like volcanic eruptions, meteor hits and underground nuclear explosion.
- Fault zone: it is also known as seismic zone. It is the area where earthquakes are most prevalent. They are the boundaries of plates on the crust.
- Richter scale: the scale used to measure the magnitude of the earthquake.
- A destructive earthquake has magnitudes higher than 7
- Seismograph: device which records seismic waves.
- Seismic waves: The tremors produce waves on the surface of the earth are called seismic waves.
- Safety measures against earthquakes:
 - If you are at home:
 1. Take shelter under a table and stay there till the shaking stops.
 2. Stay away from tall and heavy objects
 3. If you are in bed, do not get up and protect your head with a pillow.
 - If you are outdoors
 - 1) Find a clear spot, away from buildings, trees and overhead powerlines. Drop to the ground.
 - 2) If you are in a car or a bus, do not come out. Ask the driver to drive slowly to a clear spot. Do not come out till the tremors stop.
 - 3) Buildings in seismic regions should be constructed in such a way so as to withstand major tremors.