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FACULTY OF ENGINEERING AND
TECHNOLOGY

Lecture- 29

Acid rain, Ozone layer depletion



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Subject : Environmental Studies and Disaster Management

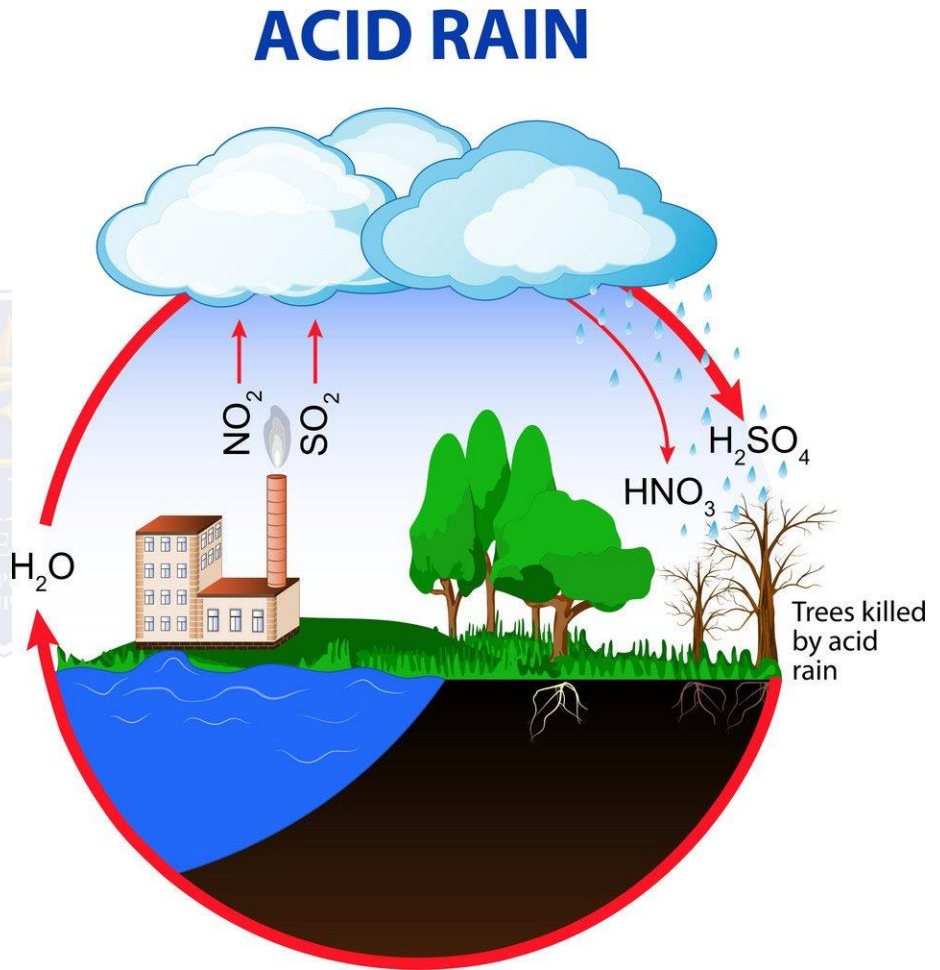
Course: B.Sc. Ag. (1st year)

Subject Code: PPY-211

Semester: IInd sem.

Acid Rain

- Various anthropogenic activities such as burning of coal, vehicular exhaust, etc. leads to production of air pollutants sulphur dioxide and oxides of nitrogen.
- These air pollutant are transported by prevailing winds to the atmosphere, may be to longer distances. In atmosphere these gases are converted into secondary pollutants forming nitric acid vapour and sulphuric acid.
- The mixture of these pollutants is known as Acid rain which return back on the earth's surface in the form of acidic rain, snow, fog and cloud vapour.



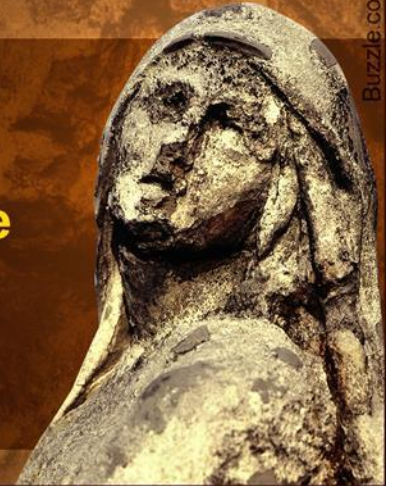
Effects of acid rain

- Acid rain leads to acid deposition on earth's surface.
- Acid deposition has many harmful effects on living organisms especially when the pH falls below 5.1 for terrestrial ecosystems and below 5.5 for aquatic ecosystems.
- It contributes to human respiratory diseases such as bronchitis and asthma, which can cause premature death.
- It also damages statues, buildings, metals and car finishes.
- Acid deposition can damage tree foliage directly but the most serious effect is weakening of trees so they become more susceptible to other types of damage.
- The nitric acid in acid deposition can lead to excessive soil nitrogen levels. This can result in excess growth of other plants like weeds and increase depletion of other essential soil nutrients such as calcium and magnesium, which negatively affect tree growth.
- Acidification of lakes affect aquatic biodiversity.

CID RAIN The Consequences



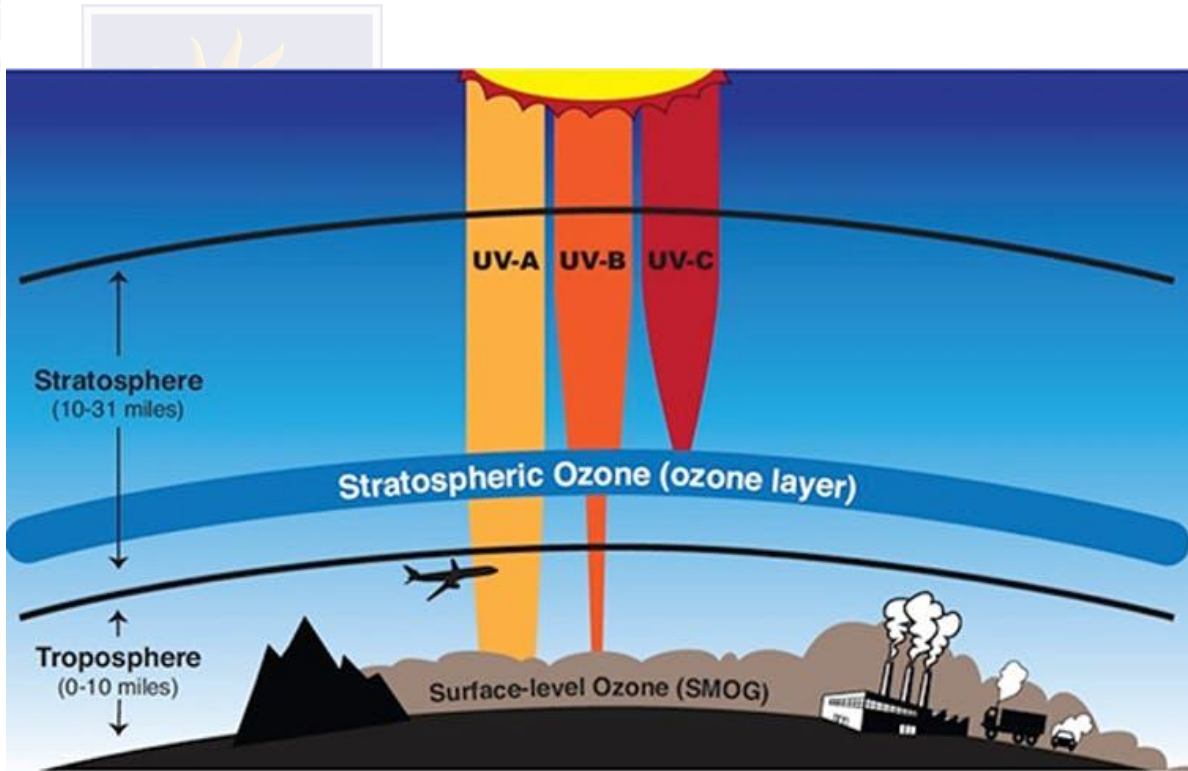
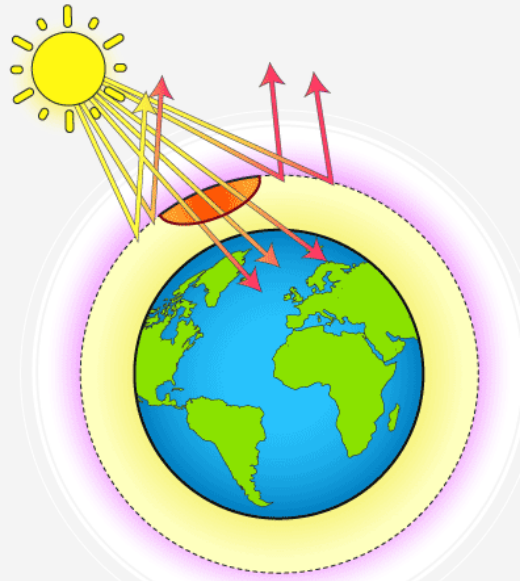
Sulfur dioxide and oxides of nitrogen in **acid rain damage the shine and texture of stone monuments and carvings.**



Ozone layer depletion

- The stratosphere consists ozone layer that act as screen for ultraviolet (UV) light.
- Though the ozone is present up to 60 kms its greatest density remains in the region between 20 to 25 kms.
- The ozone layer is measured in **Dobson Units (DU)**.
- Ozone is produced naturally from the photo-dissociation of oxygen gas molecules in the atmosphere.
- The ozone is constantly broken down in stratosphere by naturally occurring processes that maintain its balance.
- However in the presence of certain pollutants like CFC's the process of ozone breakdown accelerates resulting in **ozone layer depletion**.
- In 1985 the large-scale destruction of the ozone also called the Ozone Hole came into limelight.

OZONE LAYER DEPLETION



Effects of ozone layer depletion

- Human health: Sunburn, cataract, aging of the skin and skin cancer are caused by increased UV radiation. It weakens the immune system by suppressing the resistance of the body to certain infections like measles, chicken pox, etc.
- Food production: UV radiation affects the ability of plants to capture light energy during the process of photosynthesis. This reduces the nutrient content and the growth of plants.
- Plants and animals: Planktons are damaged by UV radiation. As planktons form the basis of the marine food chain a change in their number and species composition influences fish and shell fish production. In zooplanktons (microscopic animals) the breeding period is shortened by changes in radiation.
- Effect on materials: Increased UV radiation damages paints and fabrics, causing them to fade faster.

EFFECTS OF OZONE DEPLETION

SKIN AILMENTS



Buzzle.com

DISTURBED PLANT LIFE-CYCLES



DESTRUCTION OF MARINE LIFE



