

# **Course Code:MCC102A**

## **Course Title:Environmental Studies**

**Lecture No: 13**

**Title: Pollution**

**Course Leader : Ms. Priyanka N**



# Lecture-13

## Intended Learning Outcomes

**At the end of this lecture, students will be able to**

- Define Pollution, Air Pollution and Smog
- Describe different air borne diseases
- Discuss impact of air pollutants on human health



# Pollution – Definition

- Any undesirable change in physical , chemical or biological characteristics of air , land , water
- Pollution is the introduction of contaminants into an environment that causes instability, disorder, harm or discomfort to the ecosystem i.e. physical systems or living organisms
- Pollution can take the form of chemical substances or energy, such as noise, heat, or light



# Air Pollution

How	Why
A cloud of smoke from the exhaust of a vehicle	Increasing traffic
Smoke from a factory chimney	Industrialization
Eruption of a volcano	Rapid economic development
Cigarette smoke	Growing cities
Burning leaves	Apathetic people



# Effects of Air Pollution

- Health problems
- Damage to the environment
- Damage to property
- Thinning of the protective ozone layer of the atmosphere which is leading to climate changes



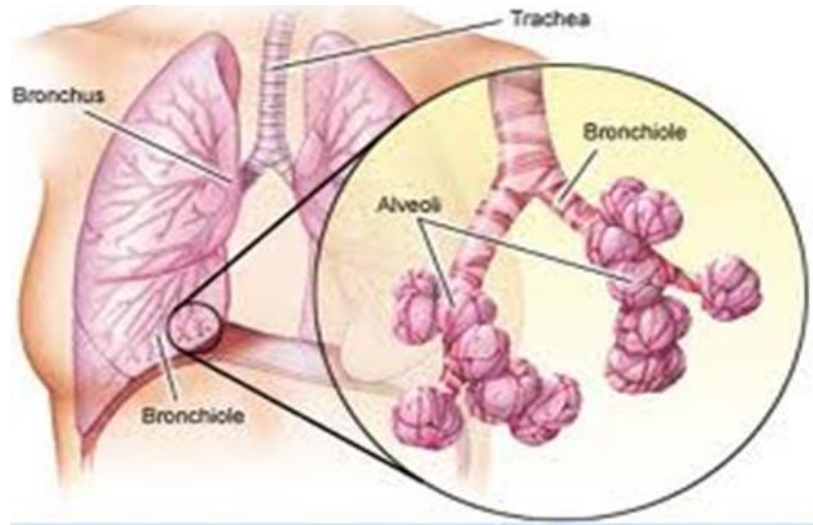
# Air Pollutants and its impact on human health

- Particulate Matter
- Dust and smoke particles cause irritation of the respiratory tract and produce bronchitis, asthma and lung diseases.
- Dust and smoke function as nuclei for condensation of water vapors and produce smog which attract chemicals like  $\text{SO}_2$ ,  $\text{H}_2\text{S}$ ,  $\text{NO}_2$ , etc.
- Smog not only reduce visibility but is also harmful due to its contained chemicals.





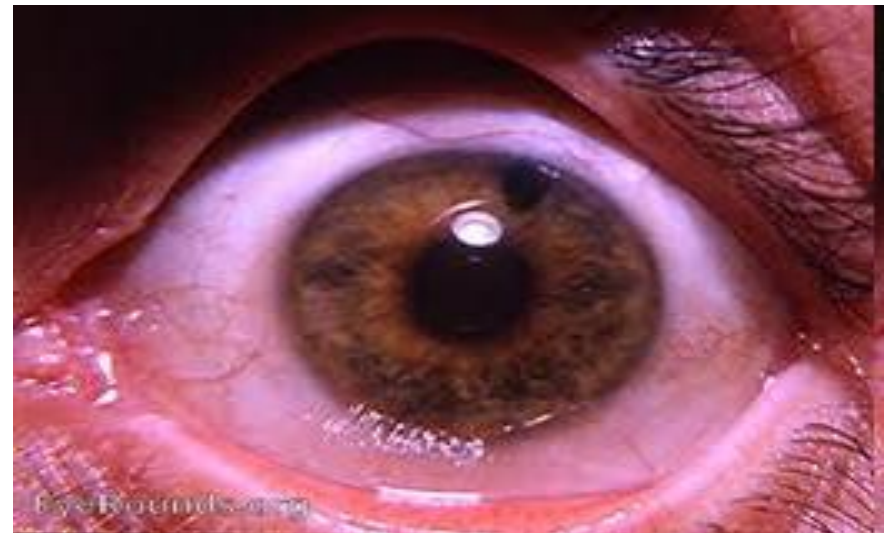
# Diseases caused due to air pollution



Asbestos - Asbestosis

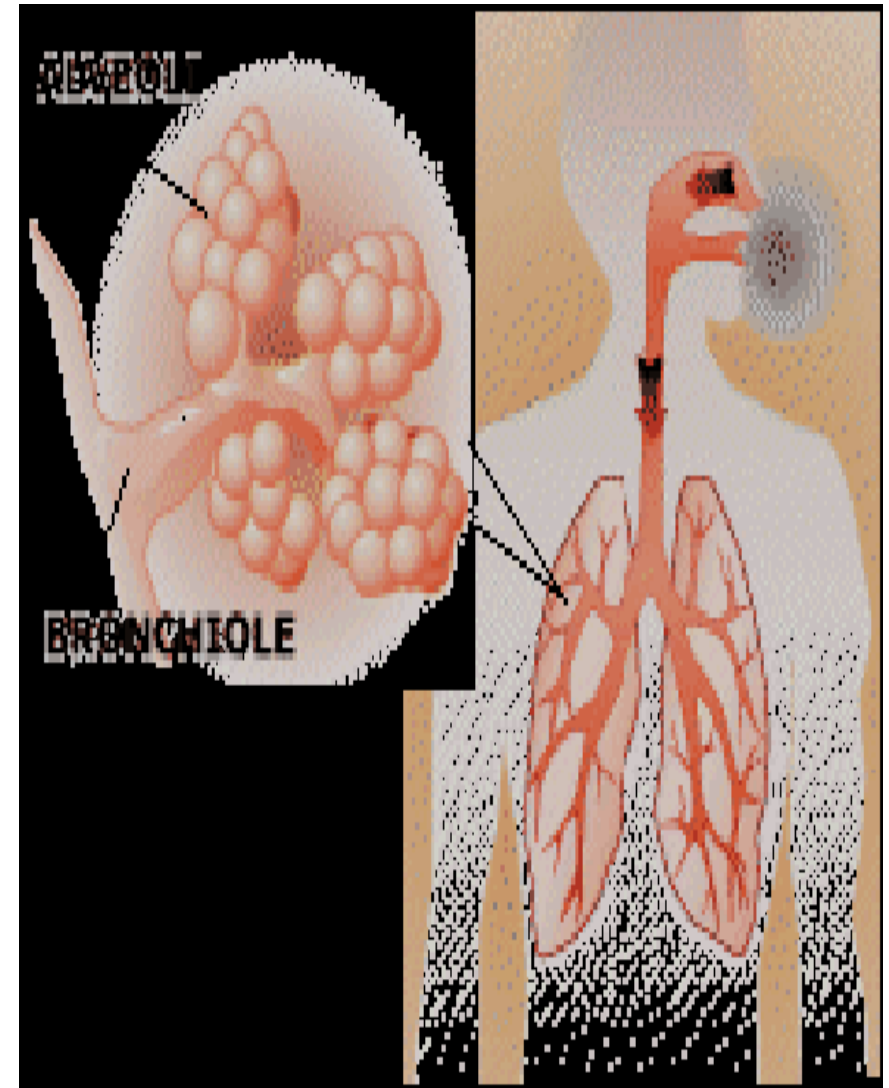
Iron- Siderosis →

The iris has the "rusty" appearance that results from siderosis.



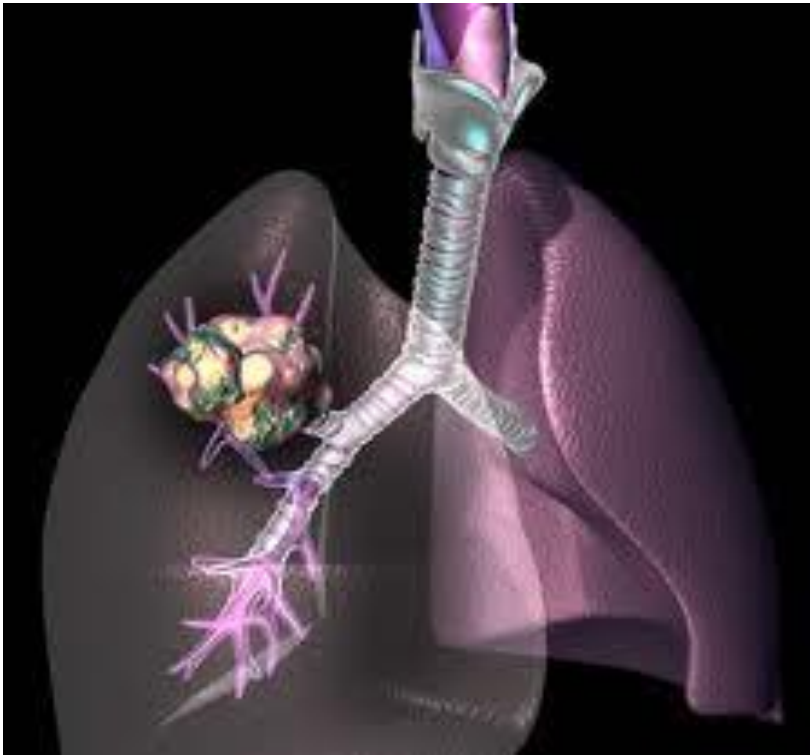
# Pneumoconiosis

- A disease of the lungs characterized by fibrosis and caused by the chronic inhalation of mineral dusts, especially silica and asbestos
- When Insoluble Inorganic Material (like silica and asbestos) enters the lungs, they stay in the lungs and cause inflammation and disease



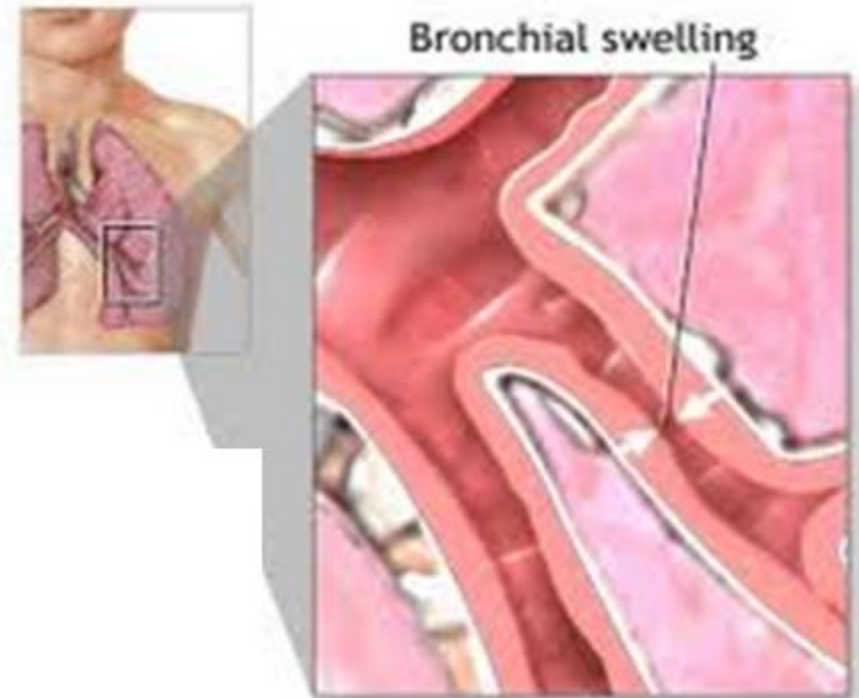


# Oxides of Nitrogen - Bronchiolitis

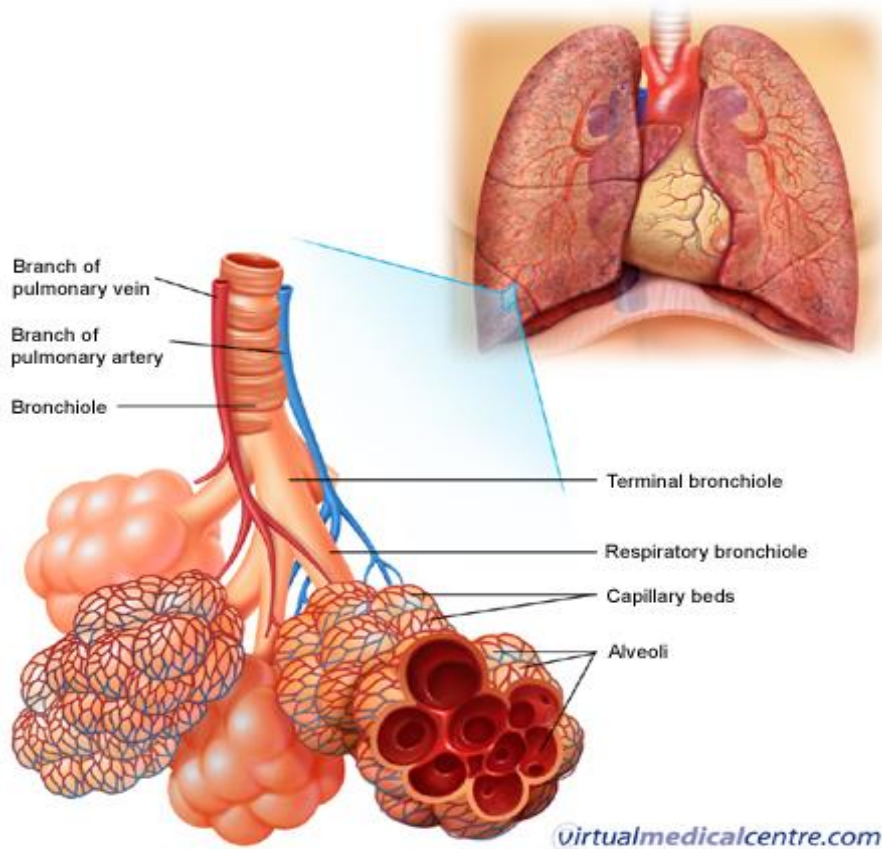


They cause eye irritation and  
respiratory trouble.

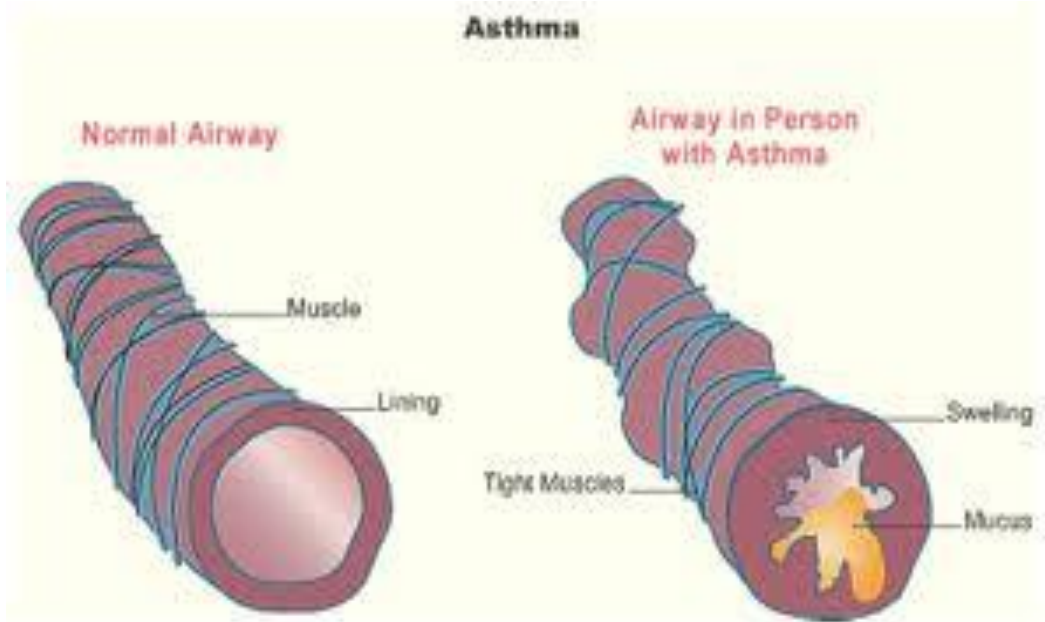
They have mutagenic properties



# Sulphur dioxide – COPD, Asthma



COPD - diseases of the lungs in which the airways become narrowed



# Carbon Monoxide

- It is formed by incomplete combustion of carbon fuels in various industries , motor vehicles, hearths,etc.
- It causes impairment of judgment and vision, headache and dizziness.

# Sulphur Dioxide

- It is produced in large quantity during smelting of metallic ores.
- It causes trachial irritation, cough, bronchial spasms.



# Chlorine

- It is present in volcanic eruptions and emitted in processes involving use of chlorinated chemicals.
- It causes eye and respiratory ailments.
- Chlorine rising up in the atmosphere poses danger to ozone layer.



# Smog

- Smog is the combination of smoke and fog. It is a man made air pollutant in urban areas.
- The term smog was coined by H.A.Des Voeux



# Smog

- Industrial Smog –“London” Smog  
“London” smog: fog soot particles Sulfur Dioxide. This forms a highly acidic mist.
  - Some incidents of deaths associated with sulfurous smog:
    - 1930- Meuse Valley, Belgium- 63
    - 1948- Donora, Pennsylvania -20
    - 1952 -London (5 days)- 4000
    - 1962 -London -700
- These deaths lead to a reduction in coal consumption and an increase in alternative fuels, such as gasoline...





# Air Pollution Solutions

- Encourage your family to walk more
- Take the school bus
- Reduce the amount of spray bottles
- Do not burn leaves in your yard- put them in a compost
- Keep your family cars in tune
- Put catalytic converters on cars
- Share your room with others when the air conditioner is on
- Take care of your trees



# Summary

- Any undesirable change in physical, chemical or biological characteristics of air , land , water is pollution
- Smog is the combination of smoke and fog
- A disease of the lungs characterized by fibrosis and caused by the chronic inhalation of mineral dusts, especially silica and asbestos is Pneumoconiosis

