

UNIT-3- Air pollution# Effects of air pollution on human beings:-

- The immediate effects of air pollution are hard to ignore. watery eyes, coughing and difficulty breathing are acute and common reactions.
- Air pollution may damage children's brain development and pneumonia, which kills almost 1 million children under the age of 5 every year, is associated with air pollution.
- high levels of air pollution include emphysema and chronic bronchitis, as well as lung cancer.
- when particulate matter is inhaled, it can irritate tissue in the nasal cavity and cause coughing & runny nose.
- In pregnant people, air pollution may trigger inflammation throughout the body, including the uterus, which increases the risk of preterm birth.
- In children, air pollution has been linked to lung damage and can inhibit growth of lung function.

Effects of air pollution on plants and animal :-

Some air pollutants harm plants and animals directly.

• Acid rain harms living things :-

When acidic air pollutants combine with water droplets in clouds, the water becomes acidic. When those droplets fall to the ground, the acid rain can damage the environment. Damage due to acid rain kills trees and harms animal, fish and other wildlife.

• When acid rain soaks into the ground, it can make the soil an unfit habitat for many living things.

• Global warming harms living things :-

• Our planet is currently warming much more rapidly than expected because additional greenhouse gases are being released into the atmosphere from air pollution.

• When fuels are burned, some of the pollutants released are greenhouse gases. Through the process of photosynthesis, plants convert carbon dioxide into oxygen and use the carbon to grow larger. However the amount of carbon dioxide released by burning fuel is much more than plants can convert.

→ Global warming is causing changes to the places where plants and animals live around the world. For ex →

• Near the poles, ice and frozen ground are melting. This causes changes in the habitat and resources for

Plants and animals living there.

- Ocean warming, rising sea level, runoff, and Coral diseases are causing change in shallow marine environments such as Coral reefs.
- Global warming is causing less rain to fall in the middle of Continents. This makes these areas very dry and limits water resources for plants and animals.

• Protophospheric ozone harms living things :-

Ozone molecules wind up near the earth's surface as a part of air pollution. Ozone molecules near the ground damages lung tissues of animals and prevent plant respiration by blocking the openings in leaves where respiration occurs. Without respiration, a plant is not able to photosynthesize at a high rate and so it will not be able to grow.

• Ambient Air quality standards in India :-

Ambient air quality refers to the condition or quality of air surrounding us in the outdoors. National ambient air quality standards are the standards for ambient air quality set by the Central pollution control board (CPCB). That is applicable nationwide.

The ~~Pre~~air 1981 ACT (CPCB) describe the main function of the central pollution control board as follows:-

- To advise the central govt on any matter concerning the improvement of the quality the air and the prevention, control & abatement of air pollution.
- To plan & cause to be executed a nation wide programme for the prevention, control of air pollution.
- To provide technical assistance and guidance to the state pollution control board.
- To carry out and sponsor investigations & research related to prevention, control of air pollution.
- To collect, compile & publish technical & statistical data related to air pollution.
- To lay down and annul standards for the quality of air,

The current national ambient Air quality Standards were notified on 18 Nov 2009. by CPCB.

Pollutant	Time weighted Avg	Concentration in ambient air.	
		Industrial, Residential, Rural & other areas.	Ecological Sensitivity Area (Notified by Central govt)
① $(SO_2) \mu g/m^3$	Annual 24 hr	50 80	20 80
② $NO_2 \mu g/m^3$	Annual 24 hr	40 80	30 80
③ Particulate matter (Size less than $10 \mu m$) or $PM_{10} \mu g/m^3$	Annual 24 hr	60 100	60 100
④ Particulate matter (Size less than $2.5 \mu m$) or $PM_{2.5} \mu g/m^3$	Annual, 24 hr	40 60	40, 60

Teacher's Signature _____

5	Ozone (O_3) $\mu g/m^3$	8 Hrs, 1 Hr	100 180	100 180
6	Lead (Pb) $\mu g/m^3$	Annual 24 Hr	0.50, 1.0	0.50, 1.0
7	CO mg/m^3	8 Hrs, 1 Hr	0.2 0.4	0.2 0.4
8	Ammonia (NH_3) $\mu g/m^3$	Annual 24 Hr	100, 400	100 400
9	Benzene (C_6H_6) mg/m^3	Annual	5	5
10	Arsenic (As) mg/m^3	Annual	6	6
11	Nickel (Ni)	Annual	20	20

Further, a new National Air Quality Index (AQI) has been launched in Oct 2014 to disseminate information on air quality in an easily understandable form for the general public.

- The measurement of air quality is based on 8 pollutants namely PM_{10} , $PM_{2.5}$, NO_2 , SO_2 , CO, O_3 , NH_3 & Pb for which short-term national ambient air quality standards are prescribed & the worst reading in these pollutants represent the AQI for the city.

UNIT- Completed.