



Al-Mustaqbal University

College of Science

Department of Medical physics

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Environmental Pollution

6th Lecture

Effects of Air Pollution

Effects of Air Pollution

The hazardous effects of air pollution on the environment include:

a- Diseases

Air pollution has resulted in several respiratory disorders and heart diseases among humans. The cases of **lung cancer** have increased in the last few decades. **Children living near polluted areas are more prone to pneumonia and asthma.** Many people **die every year** due to the direct or indirect effects of air pollution.

b- Global Warming

Due to the emission of greenhouse gases, there is an **imbalance in the gaseous composition of the air.** This has led to an **increase in the temperature of the earth.** This increase in earth's temperature is known as **global warming.** This has resulted in the melting of glaciers and an increase in sea levels. Many areas are submerged underwater.

c- Acid Rain

The **burning of fossil fuels releases harmful gases such as nitrogen oxides and sulphur oxides in the air.** The water droplets combine with these pollutants, **become acidic and fall as acid rain** which damages human, animal and plant life.

d- Ozone Layer Depletion

The **release of chlorofluorocarbons, halons, and hydrochlorofluorocarbons in the atmosphere** is the major cause of **depletion of the ozone layer.** The depleting ozone layer does **not prevent the harmful ultraviolet rays** coming from the sun and causes **skin diseases and eye problems among individuals.**

Effect on Animals

The air pollutants **suspend in the water bodies and affect aquatic life**. Pollution also compels **the animals to leave their habitat and shift to a new place**. This renders them stray and has also led to **the extinction of a large number of animal species**.

Air Pollution Control

Following are the measures one should adopt, to control air pollution:

a- Avoid Using Vehicles

People should **avoid using vehicles for shorter distances**. Rather, they should prefer **public modes** of transport to travel from one place to another. This not only prevents pollution, but also **conserves energy**.

b- Energy Conservation

A large number of fossil fuels are burnt to generate electricity. Therefore, do not forget **to switch off the electrical appliances when not in use**. Thus, you can save the environment at the **individual level**. **Use of energy-efficient devices such as CFLs also controls pollution to a greater level**.

c- Use of Clean Energy Resources

The use of solar, wind and geothermal energies reduce air pollution at a larger level. Various countries, including India, have implemented the use of these resources as a step towards a cleaner environment.

Other air pollution control measures include:

1. By minimising and reducing the use of fire and fire products.
2. Since industrial emissions are one of the major causes of air pollution, the pollutants can be controlled or treated at the source itself to reduce its effects. For example, if the reactions of a certain raw material yield a pollutant, then the raw materials can be substituted with other less polluting materials.
3. Fuel substitution is another way of controlling air pollution. In many parts of India, petrol and diesel are being replaced by CNG – Compressed Natural Gas fueled vehicles. These are mostly adopted by vehicles that aren't fully operating with ideal emission engines.

4. Although there are many practices in India, which focus on repairing the quality of air, most of them are either forgotten or not being enforced properly. There are still a lot of vehicles on roads which haven't been tested for vehicle emissions.
5. Another way of controlling air pollution caused by industries is to modify and maintain existing pieces of equipment so that the emission of pollutants is minimised.
6. Sometimes controlling pollutants at the source is not possible. In that case, we can have process control equipment to control the pollution.
7. A very effective way of controlling air pollution is by diluting the air pollutants.
8. The last and the best way of reducing the ill effects of air pollution is tree plantation. Plants and trees reduce a large number of pollutants in the air. Ideally, planting trees in areas of high pollution levels will be extremely effective.



Frequently Asked Questions

Q1

What is the major cause of air pollution?

The main cause of air pollution is the burning of fossil fuels. Harmful gases like sulphur dioxide, carbon monoxide etc. are released into the atmosphere due to incomplete combustion of fossil fuels which pollutes the air.

Q2

How air pollution causes global warming?

In air pollution, the release of **greenhouse gases** changes the gaseous composition of the atmosphere and causes an increase in the **temperature of the earth**. This increased temperature of earth is known as **global warming**.

Q3

What is acid rain? Name the gases responsible for acid rain.

Acid rain is the precipitation of acid in the form of rain. The harmful gases like **nitrogen oxides and sulphur oxides are released into the atmosphere by burning of fossil fuels**. These pollutants react with the rainwater and fall as acid rain.

Q4

Deforestation is a major reason for air pollution. Explain.

Deforestation can be defined as the large-scale removal of trees from forests or other lands. **Plants utilize carbon dioxide (CO₂) from the atmosphere for the process of photosynthesis, this causes a decrease in the amount of CO₂ in the atmosphere**. As the number of trees **decline due to deforestation**, the amount of CO₂ in the atmosphere increases, causing air pollution.