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ENVIRONMENT AND AIR POLLUTION

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INTRODUCTION :

The origin of life on earth was decided and controlled by a set of environmental conditions. Through these past millions of years, environment has played a major role in the sustenance of life and it will continue to be so for all times.

Environmental pollution is the undesirable change of our surroundings wholly or largely as a byproduct of man's action, through direct or indirect effects, change in energy pattern, physical and chemical constitution and abundance of organisms. Pollution may also be defined as direct or indirect changes in one or more components of the ecosystem which are harmful to the system or at least undesirable for man. The substances which cause pollution are called pollutants. A pollutant is a substance (e.g. dust, smoke), chemical (e.g.SO2) or factor (e.g. heat, noise) that when released in to the environment has an actual or potential adverse affect on human interests. Thus pollutants are residues of things we make use of and throw away.

Kinds of pollutants

* **Non-degradable pollutants.** The substances that either do not degrade or degrade very slowly in natural environment. E.g. mercury, cadmium, pesticides etc.
* Biodegradable pollutants. These are wastes that can be readily decomposed under natural processes. E.g. domestic sewage, heat or thermal pollution etc.

Causes or environmental pollution

* increasing concentration of carbon dioxide and other gases.
* Domestic waste and sewage.
* industrial effluents.
* Pesticides and weedicides.
* Automobile exhausts.
* Radioactive substances.

Kinds of pollution

* Air pollution.
* Water pollution.
* Soil Pollution.

* Radioactive pollution.
* Noise pollution.
* Thermal Pollution.

Air Pollution

A few billion ago, the atmosphere of the earth consisted of ammonia, methane and water vapors. Through an oxygen revolution brought about by the evolution of photosynthetic reactions, now dry air has N_2 (79%) O2 (20.9%), CO2 (0.03%) and many other gases. The human life has added a large number of pollutants in the atmosphere e.g. CO, SO_2, methane, hydrocarbons, oxides of nitrogen solid particles and heat. With so many industries coming up the presence of so many obnoxious gases and metal particles have increased tremendously in the atmosphere. Besides oxygen if air contains more than the recommended proportion, it becomes unfit for respiration. Therefore air pollution is the increases in concentraton of undesired gases in the atmosphere. The main constituents of air are oxygen, nitrogen carbon dioxide and water vapour, nad their cycles are always operative in nature so that the atmosphere is not polluted. Bute because of the addition of air pollutants the atmosphere gets polluted.

Types of pollutants

1) Gaseous pollutants :

The pollutant which is mixed with air in the gaseous state and does not settle down is knbown as gaseous pollutant. These are organic and inorganic gases, e.g. Carbon monoxide, Carbon dioxide, Sulphur dioxide, Hydrogen Fluoride, Chlorine, Ozone, Oxides of Nitrogen, Ammonia, Mercury and vapours etc.

2) Particulate pollutants :

Those pollutants which are mixed with air in the liquid or solid state and after some time settle down at the surface of the earth are called particulate pollutants. These are of two types. 1-Settleable. 2-Suspended

Different sources of air pollution

Air pollution from cars :

The number of cars on roads is constantly increasing. Each car burns fuel, and fumes come out of the exhaust pipe and pollute the atmosphere.

Electricity and Air pollution:

We all rely on electricity to cook food, watch television and make our daily lives more comfortable. Elctricity is made in power stations by the burning of fossil fuels (coal, oil and gas).

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As they are burnt, gases are emitted from tall chimneys, called stacks, into the atmosphere.

Air Pollution from Homes:

Today, most people have central heating in their homes, but in remote areas coal is still burnt to provide heat. Harmful gases are given off which can be damaging to the environment. In the past nearly all homes were heated in this way.

Acid rain:

Acid rain is the term used to describe the deposition of acidic air pollution back to Earth. This includes acidic pollution falling as rain, snow, sleet, hail, mist or fog-wet depositing-and the dry deposition of gases and particles.

Air pollution and transport:

The largest source of air pollution in is transport. The number of vehicles on roads is constantly increasing and pollution from them is now a major problem. Today there are about 29 million vehicles on the road in Britain, 24 million of which are cars.

Air Pollution and industry:

Pollution from industry was significantly reduced following the Clean Air Acts of 1956 and 1968, but still poses a problem in some areas.

The two major pollutants produced by industry are sulphur dioxide and Nitrogen oxides.

Effects of air pollution on vegetation:

Acid rain and other pollutants can harm plants. Many forests are dying in different countries of the world. The acid in polluted snow, sleet and fog, as well as rain, takes important minerals away from the leaves and the soil. Without these minerals, trees and plaint cannot grow properly.

Effects of air pollution on wildlife:

There are three ways in which animals can be affected by air pollution. They can 1. Breathe in gases or small particles; 2. Eat particles in food or water; 3. Absorb gases through the skin.

Effects of air pollution on health:

Particulate pollution:

Particulates in air pollution are one of the main causes of health problems. In towns and cities, these are released mainly from diesel engines in cars and trucks.

When we breathe in air pollution, the very fine particulates can easily enter our lungs, where they can cause breathing problems, and over time even lead to cancer.

Ozone:

Ozone that forms near to the ground can also damage our lungs and throats. If you have

asthma then the symptoms may be even more severe.

Carbon Monoxide :

Other air pollutants also cause problems for our health.

Carbon monoxide, from transport, cigarette smoke and faulty gas fires, affects the blood and is especially dangerous to preganat women and their unborn babies.

The babies may be born with brain damage.

Lead :

Lead in petrol has now been banned.

Before 2000, lead from petrol fumes was a potential cause of damage to organs in the body such as the kidneys, heart and brain. Children were more sensitive to the effects of lead pollution than adults.

Effects of air pollution on buildings :

The effects of air pollution on buildings have been noticed since the beginning of the Industrial Revolution 200 hundred years ago. Buildings that had been standing in all types of weather for thousands of years suddenly began to decay rapidly.

Limestone & Marble :

Air pollution can be especially damaging to limestone and marble. When acid rain falls on the buildings it slowly dissolves away the stonework. Ancient monuments are affected by air pollution more than modern buildings because they are often made of limestone or marble. Consequently, these buildings may need constant up-keep.

Plastics :

Acid rain also affects most other materials. Paint and some plastics may be damaged quite badly.

How to control air pollution

There are many ways we can all help to reduce air pollution.

Public Transport:

Use buses and trains instead of cars, as they can carry far more people in one journey.

This cuts down the amount of pollution produced.

Walking & Cycling :

Walking or cycling whenever you can will be even more beneficial, as it does not create any pollution. It will also benefit your body, as regular exercise will keep you fit and healthy.

Car sharing :

Avoid using cars for very short journeys as this creates unnecessary pollution. If a car journey must be made, then try to share it with other people, such as when you go shopping.

Also encourage people to drive more slowly as this produces less pollution.

Saving Energy & Electricity :

We can also help prevent pollution from our own homes. Turning off lights when they are not needed and not wasting electricity will reduce the demand. Less electricity will needed to be produced and so less coal, oil and gas will have to be burnt, resulting n less air pollution.

With use of new technology :

Developments in technology can reduce acid rain and air pollution but a lot of money is needed to make them work.

Reducing Pollution form Cars :

Since 1993 all new cars sold in Europe have been fitted with a catalytic converter. A catalytic converter takes harmful pollutants and turns them into less harmful ones. New fuels are being made that are cleaner than petrol and diesel The ones that have been developed so far are liquid petroleum gas, hydrogen, alcohol, battery power etc.

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