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# ICSE GEOGRAPHY

Based on the latest ICSE syllabus

R K JAIN

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# ICSE GEOGRAPHY

**Class 9**

**Chapter 17: Pollution – Effects and Prevention**

## EFFECTS OF POLLUTION

Most of the effects of environmental pollution are due to various human activities. The main factors which determine the effects of pollution on environment and human health are as under:

1. The nature of pollutants
2. The concentration of the pollutants
3. The duration of exposure
4. The age of the receptor
5. The state of health of the receptor

## EFFECTS OF NOISE POLLUTION

**Noise pollution** is the leading cause of stress today. It has the following effects on humans, animals and physical environment.

- ❖ High decibel (dB) noise has physiological and psychological effects on human beings.
- ❖ Noise level between 80–130 dB can cause temporary or permanent hear loss.
- ❖ Constant exposure to high dB noise can cause hypertension, stomach disorder, heart disease, hormone imbalance, etc.
- ❖ The emotional effects include anxiety, irritability, sleeplessness, lack of concentration, mental tiredness and lower working efficiency.
- ❖ The workers working in industries which use noisy machines generally have hearing disorders.
- ❖ Sudden and loud noise can cause collapse of weak buildings and glass panels.

## EFFECTS OF AIR POLLUTION

The main pollutants in the air are the oxides of carbon, sulphur and nitrogen, chlorofluorocarbons (CFCs), hydrocarbons, suspended particulate matter (SPM), etc. The air pollutants have already damaged historical buildings, monuments, marble statues and other heritage sites all over the world.



Exhaust from  
automobiles



Smog in urban areas

### Oxides of Sulphur

Sulphur dioxide ( $\text{SO}_2$ ) is produced by volcanic eruptions, industries, and burning of fossil fuels. During the rainy season,  $\text{SO}_2$  combines with water and forms sulphuric acid. This causes **acid rain**.

- ❖  $\text{SO}_2$  affects the respiratory system which results in cough and asthma. It also causes allergies like irritation in the eyes.
- ❖ It retards the growth of crops and other plants and causes **necrosis** in leaves.



Sulphur dioxide causes leaf  
necrosis



## Indoor Air Pollution

In cities, the indoor air pollution is due to modern lifestyle. In poor and developing countries, villagers face the greatest threat from indoor air pollution. Their homes are poorly ventilated. They use the traditional fuels, such as firewood, charcoal and cow dung for cooking and heating.



Indoor air pollution

- ❖ The smoke can cause chronic bronchitis and infection in the respiratory tract.
- ❖ Tobacco smoke can cause lung cancer and also affect passive smokers.
- ❖ Volatile organic compounds from building materials, paints, cleaning products, adhesive, etc. can cause irritation to mucous membrane, headache and insomnia.
- ❖ Fibre glass can cause skin rashes and itching.
- ❖ Moisture from refrigerators, air conditioners, ornamental plants, etc. help in the growth of fungi and bacteria which are health hazards.

## EFFECTS OF WATER POLLUTION

The pollution of fresh and marine water has harmful effects on the environment, human health and other organisms. The consumption of polluted water is the cause of many diseases in human beings and animals throughout the world. Water pollution is mostly due to domestic, industrial, agricultural and marine wastes.



Domestic waste

## Agricultural Waste

The excessive use of nitrogenous fertilizers and pesticides can contaminate the water. The agricultural waste has the following effects.

- ❖ The water becomes turbid due to suspended impurities and is unfit for domestic use.
- ❖ It causes respiratory and vascular damage by restricting the flow of oxygen to brain.
- ❖ It can disturb nerve activity and cause leukaemia, sterility, tumor and hypertension.
- ❖ It can cause precipitation of proteins in the body, resulting in the damage of the liver.
- ❖ It reacts with respiratory system and causes acute suffocation by blocking the respiratory tract.



Agriculture waste

## Marine Waste

The ocean and sea water is an important source of food, energy and commerce. Unfortunately, oceans and seas are being used as a dumping place for wastes of all kinds, which are toxic in nature.

## EFFECTS OF SOIL POLLUTION

Soils can be polluted by organic and inorganic chemicals and toxic metals. Some of the toxic chemicals from the polluted soil may enter the food chain and then enter the body of humans and other organisms, causing serious health problems.



Reduced fertility due to soil pollution



**The agricultural practices** have the following effects:

- ❖ Excessive use of chemical fertilizers and pesticides can harm the friendly microorganisms in the soil and pollute the groundwater.
- ❖ The excessive use of **plant macro-nutrients** can cause shortage of micro-nutrients in the soil.



Weeds in water bodies

The **radioactive waste** stays in the soil for thousands of years. The crop from such soils can cause acute health problems for human beings

## EFFECTS OF RADIATION POLLUTION

The radioactive substances and radiations from these substances can cause tremendous harm to human beings as well as to the animals and plants. It depends on the intensity and duration of exposure. It can cause disorders ranging from minor skin burns to major deformities.



Warning for radioactive waster

The radiations from the radioactive substances have the following effects.

- ❖ The exposure to **high energy radiations** from ultraviolet rays, X-rays and ionizing radiations can cause breast cancer, lung cancer, brain cancer, etc.
- ❖ The exposure to high energy radiation is more harmful to infants and pregnant women.
- ❖ The **low energy radiations** from computer,

## PREVENTIVE MEASURES

The survival of life on Earth is directly linked with the health of the environment and sustainability of its resources. At present our environment is not in good health. The people from all over the world have contributed towards the environmental degradation.

The industrial and economic growth in the world has caused pollution of air, water, soil, etc. on a large scale. The increasing environmental pollution has adversely affected our health. About 50 years ago, the people and the governments of various nations realised the negative impact of pollution on human health.

In the present day world, it is very difficult to bring the environmental pollution down to zero level. Serious consideration, planning and action are needed to reduce the pollution. We can take several **preventive measures** to control and reduce the environmental pollution.

### Carpooling

Carpooling, also known as car-sharing, is the shared use of cars by persons with similar travel needs. It means that people living in the same area and going for work to the same area, should not use their individual vehicles everyday. In the system of carpooling more than one person travel in a car.



### Promotion of Public Transport

The public transport is a shared passenger transport service which is available for use by the general public. It is different from other means of transport, such as taxicabs, carpooling or hired buses which are not shared by strangers. The means of public transport include city buses, trams, local passenger trains, metros, subways, etc.

The **commuter rail** is part of an urban area public transport. It provides faster services for neighbourhood towns. The rapid transit railway system, also called **metro**, operates in big cities with high capacity and frequency. The metros can transport a large number of people quickly over short distances.



Delhi Metro Rail (Mass-transit system)

### No Smoking Zone

The Supreme Court of India recognised the harmful effects of smoking in public and also its effect on **passive smokers**. It prohibited smoking in public places, such as auditoriums, hospital buildings, health institutions, educational institutions, libraries, court buildings, public offices and public transport including the railways.



No-smoking zone

### Restricted use of Fossil Fuels

The fossil fuels produce energy when burnt. Energy is needed for cooking, running transport vehicles and industries. The fossil fuels include coal, petroleum and natural gas. They were formed due to the decay of buried plants and animals over millions of years.

### Save Energy

The importance of energy can be understood in relation to the comforts of an individual and the economic development of a nation. Human beings are highly dependent on energy resources (coal, petroleum, natural gas) to meet their needs. The rapid increase in population has increased the demand for energy.

Some ways for saving energy are as under:

1. Avoid wastage of energy in our daily life and promote the use of alternate sources of energy.
2. Develop new technology to increase the efficiency of energy in domestic, industrial, transport and power generation sectors.
3. Electrical appliances such as fans, radios, televisions, music systems, air conditioners, heaters, geysers, etc. should be switched off when not in use.
4. The energy efficient appliances can be costlier, but the consumption of less energy will make them profitable in the long run. For example, the LED bulbs are energy efficient.

### Encouragement of Organic Farming

In India, organic farming system has been followed from the ancient times. This farming system is mainly aimed at cultivating the land and raising crops to keep the soil alive and in good health by use of organic wastes and other biological materials.



Composting

The methods of organic farming use the natural environment to increase agricultural production. **Legumes** are planted to fix nitrogen in soil. The crops are rotated to confuse pests. Crops diversity is a distinctive feature of organic farming. The conventional farming focuses on **monoculture**, while organic farming employs **polyculture**. It does not use genetically modified organisms in food production.



**THANK  
YOU**