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BOOKS

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Revised and Updated

ICSE GEOGRAPHY

Based on the latest ICSE syllabus

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10

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CONTENTS

ICSE GEOGRAPHY

Class 10

Chapter 22: Impact of Waste Accumulation

Any material or substance, which is no longer required and has been discarded, is called waste. India generates about 150 million tonnes of waste in one day. We can see heaps of waste lying along roadsides, in street corners, in hospitals, school backyards, near water bodies and also at various public places. In the absence of proper waste management, the accumulation of waste has become a major problem, not only in our country, but also in many developed and underdeveloped countries in the world.

The accumulation of waste is a serious health hazard, apart from being eyesores. It becomes breeding ground for flies and mosquitoes, which can spread and cause dangerous diseases. It also causes pollution and generates bad odour. The main impacts of waste accumulation are as follows:

1. spoilage of landscape
2. pollution of air, water and soil
3. health hazard
4. effect on terrestrial life
5. effect on aquatic life

SPOILAGE OF LANDSCAPE

Much of the waste generated in developing and underdeveloped countries is dumped on vacant land and left there to decompose. We can see domestic and commercial waste dumped along roadside, railway tracks, rivers, ponds, in public parks, bus stands, and at almost all public places. The approach lanes in towns and cities are littered with plastic bags and wrappers.

POLLUTION OF AIR, WATER AND SOIL

Any undesirable change in our environment (physical, chemical or biological), which is harmful to living organisms is called pollution.

Dumping of waste in an open space pollutes the area and spoils the landscape

Air Pollution

The major sources of air pollution are industrial wastes that include smoke and gases from chimneys and furnaces, gases produced on burning of wastes and dead bodies, suspended particulate matter and toxic wastes. The gaseous waste from industries and thermal power plants include carbon monoxide, carbon dioxide, oxides of sulphur, oxides of nitrogen, etc. Carbon monoxide, when inhaled, can affect the delivery of oxygen to the respiratory system. Suspended particulate matter can cause allergies and damage to the lungs.

Acid rain : High concentration of sulphur dioxide leads to acid rain, which has damaging effects on plants, aquatic life and monuments. Acid rain can make water unsuitable for plants, fishes and other animals.

Smoke from factories causes air pollution

Global warming: Excessive presence of carbon dioxide in the air results in global warming. The increase in temperature can cause change in climatic patterns, affect crop production, disrupt wildlife distribution, rise in sea level, etc. The burning of plastic waste releases highly toxic chlorine products. The inhalation of nitrogen oxide causes eye irritation, pulmonary congestion, etc.

Water Pollution

The major sources of water pollution are discharge of domestic sewage and garbage into nearby water bodies. The waste from chemical and industrial factories has toxic substances. Animal remains from slaughter houses, meat and fish canning factories, leather tanning factories and a variety of organic waste pollute the water bodies. Water is also polluted by animal manure and chemical fertilisers. The radioactive waste from nuclear power plants also pollutes the water.

Water pollution affects the organisms living in water bodies.

Water is used as a coolant in factories and power plants. The discharged water is returned warmer than when it was taken. This may cause either migration or death of aquatic life. The pesticides and other chemicals from soils can contaminate the underground water.

Soil Pollution

In the last 50 years, the quality of soil and its capacity to produce crops have degraded due to various pollutants present in soil. The main source of soil pollutants are wastes from industries and agricultural practices. Municipal waste is another important source of soil pollution. Other pollutants include acid rain,

dumping of human excreta, animal dung and waste generated in slaughter houses.

The soil pollution reduces the fertility of soil. Many diseases, such as cholera and dysentery, are caused due to soil pollution. Radioactive materials are discarded by the nuclear power plants, which get accumulated on land and decrease the fertility of soil.

HEALTH HAZARDS

The accumulated waste, when not properly disposed of, is a serious health hazard for terrestrial and aquatic animals and also for human beings.

Many industries release toxins as waste in solid, liquid or gaseous forms. These toxins can cause cancer, reproduction problems and developmental defects. The accumulated waste produces unpleasant odour and is highly infectious in nature. The water supply system in such areas can be contaminated.

Ragpickers have a high risk of getting infections

People living near the accumulated heaps of waste are at a risk of contracting infectious diseases, as the accumulated waste produces an unpleasant odour and the decomposing material is highly infectious in nature.

The biomedical waste : The biomedical waste is also a source of infection. Contaminated needles, syringes and soiled cotton thrown away as waste, have traces of infections and can cause several diseases. Coloured plastics are harmful as their pigment contains highly toxic metals, such as copper, lead, cobalt, chromium and cadmium. That is why the government is banning the use of plastics, which are a health hazard.

There are many occupational hazards associated with the handling of accumulated waste of all types:

- Skin and blood infections result from direct contact with waste and from infected wounds.
- Eye and respiratory infections result from exposure to infected dust, especially during landfill operations.
- Various diseases are caused due to the bites of animals feeding on the accumulated waste.
- Intestinal infections are transmitted by flies or insects that feed on the accumulated wastes.

Water pollution due to sewage and domestic waste is of major concern, because diseases such as typhoid, cholera, jaundice, dysentery and diarrhoea are infectious diseases which spread through contaminated water. Sometimes this leads to the outbreak of epidemics. As they spread through contaminated water, they are called waterborne diseases. About 60 per cent of all diseases in India are due to the presence of pathogenic bacteria in water.

EFFECT ON TERRESTRIAL LIFE

The terrestrial organisms–plants and animals–are always exposed to risks of health and life due to pollution related to waste accumulation.

- Animals such as cows, buffaloes and goats die of eating plastic waste.
- Pesticides and weedicides are widely used in agricultural practices, but they affect other organisms in addition to their targets. The residues of inorganic fertiliser and pesticides are responsible for killing several types of soil organisms, worms, etc.
- Sulphur dioxide can destroy leaf tissues. It can cause a disease in which the green portion of leaves become yellow.
- Many species of hunting birds with high level of DDT in their bodies are threatened with extinction. There is some disruption in animal reproduction due to DDT.
- Improperly managed and poorly designed landfills attract all kinds of insects and rodents, which spread diseases.
- Recycling of waste also carries health risks if proper precautions are not taken.
- The animals that feed on plants growing in polluted areas take in fluorides through them. This decreases their capacity to produce milk and also affects their teeth and bones.
- The terrestrial animals that are dependent upon the aquatic ecosystem get affected as a result of increase in acid concentrations. It decreases their population

EFFECT ON AQUATIC LIFE (FRESHWATER AND MARINE)

Solid and liquid waste that accumulates in water bodies affects the physical, chemical and biological characteristics of the aquatic ecosystem.

1. Dissolved Oxygen (DO) is an essential requirement for all types of aquatic life. A decrease in DO value indicates the presence of pollution, mainly due to organic waste. It leads to the elimination of sensitive organisms like plankton, mollusc and fish.
2. The thermal power plants and oil refineries release hot water into nearby water bodies. The increase in temperature of water has hazardous effects on fishes and algae, which are wiped out in due course of time.
3. Waste from sewage and agricultural fields reaches ponds and lakes. It has plant nutrients. This causes the growth of algae and other aquatic weeds. These plants cover the water surface completely. They release toxins in water, and thus, reduce the DO level. Toxicity and shortage of oxygen may cause decrease in population or even death of aquatic animals. This process is called eutrophication.
4. The organic and synthetic chemicals are widely used to make articles of our daily use, such as nylon, polyester, plastic goods, detergents, paints, insecticides, food additives and pharmaceutical products. These chemicals can harm the aquatic plants and animals, even when they are in small quantity.

5. Bioaccumulation causes toxic chemicals to accumulate in high concentrations in the tissues of animals and plants. The pesticides are non-biodegradable and fat soluble. When ingested by the aquatic organisms, they are not broken down and stay stored in tissues. The ill effects of this are felt many decades after they are actually used. Bioaccumulation is also seen with toxic metals like mercury, lead and copper.
6. Industries and nuclear power plants in coastal areas dump their waste in seawater. Organic chemicals also reach the seas and oceans through rivers. These wastes harm marine life in many ways.
7. Pollution due to oil spills during offshore exploration and extraction of oil has increased many times in the last fifty years. Oil spills affect marine life on a massive scale, killing plankton, fish and marine birds. They also harm coral reefs and can enter seafood consumed by human beings.

A bird affected by oil spill

THANK YOU