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ICSE GEOGRAPHY

Based on the latest ICSE syllabus

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ICSE GEOGRAPHY

Class 10

Chapter 23: Need for Waste Management and Methods of Safe Disposal

WASTE MANAGEMENT

Waste generation and waste management have been an important part of human activities since the inception of civilization. The common practice was to dump the waste outside the village or city limits. Sometimes the waste was burnt also.

NEED FOR WASTE MANAGEMENT

The government and the people have now understood the need for proper and scientific management of waste. The following facts will explain the need for it.

Dumping of waste is harmful for the environment

- In the last 50 years, rapid growth in population, urbanisation, large-scale industrialisation, rising standards of living and increase in consumption have increased waste generation in many parts of the world.
- Most of the countries in the world are not only facing the problem of increased amount of waste, but are also dealing with the hazardous nature ofwaste, such as radioactive waste from nuclear power plants. .

- There has been uncontrolled dumping and improper handling of waste, which cause contamination of surface and groundwater. The organic waste, after decomposition, gives rise to a variety of bacteria, fungi and viruses.
- The stinking heaps of waste in the residential areas are infested with insects, flies, rodents, etc. They carry the germs of various diseases with them, which adversely affect the human health.
- The rainwater may take away a part of the accumulated waste to water bodies, such as river, lakes, ponds and wells, and cause serious water contamination. This can cause epidemics
- Very large heaps of organic waste normally biodegrade very slowly. They can produce harmful and toxic gases, which can easily cause the pollution of surrounding air.
- If the industrial waste, which is discharged on open land or in water bodies, is not treated properly, it can cause soil pollution and contamination of water in rivers, lakes, seas, oceans, etc. It can cause cholera, jaundice, dysentery, diarrhoea, etc.
- The pathogens, such as bacteria, virus, protozoa and parasites, breed and thrive in the stagnated and contaminated water. About 60 per cent of diseases in India are due to the presence of pathogenic bacteria in water.
- If the domestic, industrial or agricultural waste is not properly managed, it can produce greenhouse gases, such as carbon dioxide, methane, nitrous oxide, etc. These gases many cause climatic change and global warming.

- The phenomena of acid rain and ozone layer depletion are linked directly or indirectly with improper waste management.
- Nowadays people think that waste is a misplaced resource material, which has been abandoned at a wrong place. The waste produced by one person can be a source of wealth for someone else.
- Large quantities of organic waste can be used for producing fuel gas, generating electricity and also for making manure after being bio-decomposed.
- Many types of domestic, commercial, industrial and agricultural waste can be recycled or reused for various purposes.
- The radioactive waste from nuclear power plants is highly dangerous, and thus, needs special attention.

METHODS OF SAFE DISPOSAL OF WASTE

The waste management programme should evaluate local needs and accordingly select a combination of suitable methods for waste management and its safe disposal. The different steps in the management of waste are:

1. Collection of waste
2. Segregation of waste
3. Safe disposal of waste

Collection of waste from doorstep

Collection of Waste

The waste which is produced as a result of human, agricultural, industrial and biomedical activities needs to be collected from the source where it is produced. The local bodies should arrange for the collection of waste from the doorsteps or from the place where it has generated and accumulated. The accumulated waste should be sorted out in different types. Some of the tips are as folows:

- The wastes can be collected through community bins.
- The biomedical waste needs to be collected separately.
- The waste from hotels and restaurants needs to be collected daily.
- The waste from public and private parks can be collected weekly.
- Large containers can be used to collect waste from construction and demolition sites.

Segregation of Waste

The municipal waste has biodegradable and nonbiodegradable materials. Thus, the waste should be segregated at the source as different types of waste need to be disposed off in different manner. For example, at home we can segregate plastic, newspaper and other waste.

In residential areas, the waste can be separated by using different coloured bins in which the residents can throw the waste accordingly. For example, blue coloured bins can be used for non-biodegradable waste and green coloured bins for biodegradable waste.

Safe Disposal of Waste

The common methods used for the disposal of solid waste in different parts of the world are dumping, landfill, composting, incineration, recycle and reuse. We will study about dumping and composting only.

1. **Dumping:** In most of the developing and underdeveloped countries, the waste materials are dumped in open grounds, away from the city or town, and left to decompose. This conventional, inexpensive and widely used method of waste disposal has many disadvantages, such as:

- It is harmful for the environment as well as for humans and other living organisms.
- The solid waste materials which are left in the open give out bad smell.
- The dumped waste becomes breeding ground for flies, mosquitoes and harmful bacteria.

Dumping and landfill

- This waste is the main source of diseases in such areas where it is openly dumped.
- The rain can wash away this waste to nearby water bodies such as rivers, lakes or ponds. These water bodies thus get polluted.
- Sometimes this waste percolates down the soil and thus, pollutes the groundwater.

The method of dumping the waste in open areas is being replaced by landfill, which is a widely used method for municipal solid waste disposal. The landfills are generally far away from residential areas. In this method, the landfill is covered with soil, so that insects do not enter it. Landfill method has the following advantages.

- There is no pollution of air, as the landfill is covered with soil.
- The health hazards are less as the mosquitoes and rats do not breed on the waste.
- It is not suitable for non-biodegradable waste, which is not fit for composting, recycle or reuse.
- The waste is dumped at pre-planned site.

2. Composting: It is a natural biodegradation process in which the biodegradable solid waste can be converted into nutrient-rich manure in the presence of microorganisms. Composting can be done either in the presence of atmospheric air (aerobic composting) or in the absence of atmospheric air (anaerobic composting). This method is widely practised in villages, as this method involves the decaying plants, leaves, etc. to be buried in a small pit and left to decay.
Composting includes the following steps:

- Dig a compost pit measuring 2 m × 1 m × 1m.
- Segregate the solid biodegradable waste for composting.
- Cut the waste into small pieces, as these pieces occupy a smaller volume.

- It is also easier for microorganisms to decompose small pieces of waste.
- Mix the compostable waste with garden waste and animal dung, as this will provide air circulation.
- Cover the filled pit with a thin layer of good quality soil.
- Sprinkle water over the decomposing waste once or twice in a week to ensure that the waste is kept moist.
- Leave the pit undisturbed for about three months for composting process to get completed.

Composting

Composting has several advantages, such as:

1. It enhances soil nutrients like nitrogen, potassium and phosphorus.
2. It enhances the water retention capacity of the soil.
3. It enriches poor quality soil by adding humus and makes it more fertile.
4. It reduces the need to buy chemical fertilisers.
5. It works as a natural waste disposal system

Vermicomposting

Vermicomposting is another method, in which manure is obtained from biodegradable waste by adding earthworms to the compost. The earthworms help in degrading the waste and the excreta of the worms makes the compost rich in nutrients.

Vermicomposting

THANK YOU