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E-Content II (ii)
for
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Short description of the suggested Topics

THEORY PAPER

PAPER – X

(WASTE GENERATION AND MANAGEMENT)

2. Meaning of Solid Waste Management; Challenges of Solid Waste Management.

Meaning of Solid waste and Solid waste Management:

Waste is a generalized word used to include any material that is no longer needed for use to the owner and is thrown away uncared. According to Resource Conservation and Recovery Act (RCRA), U.S.A "Solid Waste means any garbage or refuse, sludge from a waste water treatment plant, water supply treatment plant or air pollution control facility and other discarded material, resulting from Industrial, Commercial, Mining and Agricultural operations and from community activities". It is important to note that definition of solid waste is not limited to wastes that are physically solid. Many solid wastes are liquid, semi-solid or contained gaseous material.

Solid waste management includes the activities and actions required to manage waste from its inception to final disposal. This includes the collection, transportation, treatment and disposal of waste, together with monitoring and regulation of the waste management process.

Waste generation and Waste Management have been a part and parcel of human activity since the inception of the civilization. But until recently waste disposal and waste management did not attract much public or government's attention. The common means of disposal/management were to dump them outside the village or city limits and burn or compost them occasionally.

But in recent years, things have greatly changed in respect of waste generation and waste management. Today, waste management is one of the most pressing environmental issues facing the nations of the world. Waste management is posing an enormous challenge everywhere and a threat to human health and the global environment. The problem demands proper planning followed by the implementation of a comprehensive programme for waste management.

"Improperly managed waste is a source of sorrow, properly managed waste is wealth".

These two facets of waste management should be the guiding 'Mantra' for all individuals, community and the government attending to the gigantic task of waste management.

As mentioned above Scientific Management of Waste includes the following steps:

- Collection and Segregation of Waste
- Transportation
- Disposal

Collection and Segregation of Waste:

The first step in the process of proper waste management is the collection of waste after sorting out different types of waste from the heap of solid waste. In this process similar classes of solid waste are sorted out and collected separately in different waste bins.

Transportation:

When bins are filled, municipal cooperation or other agencies engaged in waste management take away the collected waste in big trolleys or vans to the place of its disposal.

Disposal:

Common methods for the disposal of solid wastes all over the world are as follows:

- Open dumping
- Sanitary landfill.
- Incineration
- Composting and
- Recycling and reuse.

Needs and Challenges of Solid Waste Management:

NEEDS:

In recent years the generation of waste, particularly in developing countries including India has been increasing alarmingly both in quantity and complexity. Waste management is pressing an enormous challenge everywhere and a threat to Human health and the global environment. The problem demands urgent attention.

Following are some important reasons why there is an urgent need for proper management of the huge quantum of various kinds of wastes being generated today:

i. In the century that passed there had been a dramatic increase in world population size. Population growth, industrialization and urbanization, rising standards of living and increase in consumption have all contributed to exponential growth in the magnitude of waste generated in most countries of the world. These factors have posed a big challenge to proper management of huge quantum of various types of waste.

ii. Many countries of the world are now faced with the challenge of dealing with not only the huge volume of waste materials but with the hazardous nature of the wastes. Thus, E-waste and nuclear waste, which were not even heard of some 4-5 decades back, are now posing serious health problems in many parts of the world.

iii. Uncontrolled dumping and improper waste handling causes a variety of problems including contamination of surface water and ground water. A number of bacteria, fungi and viruses develop in the heap of decomposing organic waste. Flies, insects, rodents etc. visit these stinking heaps and take germs of various diseases to human habitations. Sometimes, all these lead to breakdown of epidemic and other health hazards.

iv. Discharge of untreated industrial wastes on open land and in water bodies is an important irresponsible act by industries which lead to serious soil pollution and contamination of fresh water and marine water.

v. Disposed of sewage and domestic waste in nearby water bodies leads to the spread of various water-borne diseases. The diseases - typhoid, cholera, jaundice, diarrhoea etc. are produced by pathogens- bacteria, virus, protozoa and parasites which breed and thrive in stagnant and polluted water.

vi. Improper waste management increases emissions of greenhouse gases like carbon dioxide, methane, oxides of nitrogen etc. These gases contribute to global warming and climate change.

vii. Such global environmental problems as Acid Rain and Ozone layer depletion are also linked directly or indirectly to the improper disposal of wastes from factories and refrigeration units and appliances.

viii. Economics is another consideration for proper waste management practices. It has been described briefly in Question no. 1 that "Waste is a misplaced resource and unrecognized wealth abandoned in a wrong place."

ix. Piled-up heaps of garbage, junk, metallurgical or mining solid wastes look ugly and mar the aesthetic beauty of landscape.

Challenges of Solid Waste Management:

In Solid Waste Management of developing countries five typical challenges/problem areas can be identified. They are:

i. Inadequate service coverage
ii. Operational inefficiencies of services.
iii. Limited utilization of recycling activities.
iv. Inadequate management of non – industrial hazardous waste, and
v. Indifferent and/or inadequate participation/involvement of community members.

Let us elaborate these points in some more details:

Waste Management rules in our country are based on the principle of "Sustainable Development", "Precaution" and "Polluter pays". These principles mandate municipalities and commercial establishments to act in an environmentally accountable and responsible manner – restoring balance, if their actions disrupt it.

With dramatic increase in population, industrialization and rapid urbanization the country is facing massive waste management challenge. Of the

total waste generated particularly by urban people some 70% only is collected. Of the collected waste about 25% of it is treated the rest is dumped in landfills. Solid waste management is one among the basic essential services provided by municipal authorities in the country to keep urban centres clean. However, almost all municipal authorities deposit solid waste at a dump yard within or outside the city haphazardly. Experts believe that India is following a flawed system of waste disposal and management. According to one observation more than three fourth of solid waste management budget is allotted to collection and transportation, leaving very little for processing or resource recovery and disposal.

There has been technological advancement for processing treatment and disposal of solid waste. Energy from waste is a crucial element of solid waste management as it helps in converting the waste into renewable energy and organic manure. But many waste to energy plants in India are not operating to their full potential.

In different and/or inadequate participation of Community Members:

We generate various types of waste in homes, offices and public places all the time. We throw these wastes away on roads, lane corners and other public places. The society thinks it is the responsibility of the municipalities or other government bodies to collect and dispose of the waste which the community produces. Sometimes many of the community members burn garbage to get rid of it. These modes of waste disposal are unscientific and pose a challenge as it causes a number of problems.

The life of a community and the quality of the environment around are interdependent. A healthy environment requires proper and scientific management of the waste generated by the community members. People's participation in waste management which is mostly inadequate, can only be ensured through motivation and awareness, through proper information and knowledge as to what to do and what not to do for a better environment.

Note: Examinees are advised to shorten and/or modify the description given above as per the demand of the question asked to answer. Study Learning Material provided by Nalanda Open University, Patna, M.A./M.Sc. Environmental Science, Part II, Paper X may also be consulted if felt so.