18CYM101T - Environmental Science

Assignment - II

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ECE - A

⇒ Solid Waste Management:

Solid waste management is the collection, treatment, and disposal of solid material that is discarded because it has served its purpose or is no longer useful.

Improper disposal of solid waste can create unsanitary conditions, which in turn lead to pollution of the environment and outbreaks of vector-borne diseases.

⇒ Types of Solid Waste Management:

Solid waste management is usually referred to the process of collecting and treating solid wastes. It provides solutions for recycling items that do not belong to garbage or trash. Some methods of solid waste disposal and management are as follows:

1. Solid waste open burning.
2. Sea Dumping Process
3. Solid wastes Sanitary Landfills. In this process, layers are compressed with some mechanical equipment and covered with earth, leveled, and compacted. A deep trench of 3 to 5 m is excavated and micro-organisms act on the organic matter and degrade them.
4. Incineration Method: It is suitable for combustible refuse. It can be used to reduce volume of solid wastes for land filling.
5. Composting Method. Decomposable organic matter is separated and composted in this procedure. Yields are stable end products and good soil conditioners. They can be used as a base for fertilizers.
6. Disposal by ploughing into the fields.
7. Disposal by hog feeding.
8. Salvaging / Recycling Procedure.
9. Fermentation / biological digestion.

⇒ Effects of Processing of Solid Waste:

1. Environmental effects:

a) Hazardous gas emissions: Green house gases such as methane, toulene, methylene chloride are releases that effect the ozone layer.

b) Water Quality / Contamination: Leading to decrease in oxidation - reduction potential and increase of mobility of toxic metals. Effects aquatic life as well as life on land.

c) Energy Consumption: Trucks have to travel to locations to fill landfills.

d) Natural Habitat Degradation: As land is claimed for landfills, it becomes intolerable for many plants and animals.

e) Biodegradation: Landfills tend to mummify their contents, severely prolonging oxidation and natural breakdown processes.

2. Economic:

a) Siting Resistance and Regulation: No one wants to live near a landfill, and as regions urbanize, it becomes more difficult to find land that is suitable for dumping and amenable to the surrounding population.

b) Disposal Costs: Unlike recycling, which requires reprocessing used materials, or composting, which requires intensive sorting, landfilling needs far less money and effort.

⇒ Disposal Methods:

- Open dumping:

It is defined as a land disposal site at which solid wastes are disposed of in a manner that does not protect the environment, are susceptible to open burning, and are exposed to the elements, vectors and scavengers.

- **Engineered Landfilling:**

It is a method of disposing of refuse on land without creating nuisance or hazard to public health or safety, by utilizing the principles of engineering to confine the refuse to the smallest practical area.

- **Composting.**

It is a biological process in which the organic portion of refuse is allowed to decompose under carefully controlled conditions. The products of composting can be such as biogas, or fertilizers and much more.

- **Incineration.**

It is the high temperature burning of waste and is a technology that destroys organic constituents in waste materials. It is also known as controlled-flame combustion or calcination.