

## MODULE –II

### ENVIRONMENTAL POLLUTION

#### 2.5 SOLID WASTE MANAGEMENT OF URBAN & INDUSTRIAL WASTE

##### Sources

- Land fill
- Incineration
- Composting



## MODULE –II

### Environmental pollution

#### 2.5 Solid waste management of urban & industrial waste

Solid waste management is a term that is used to refer to the process of collecting and treating solid wastes. It also offers solutions for recycling items that do not belong to garbage or trash. As long as people have been living in settlements and residential areas, garbage or solid waste has been an issue.

Depends upon the nature, solid wastes are classified into 3 types.

1. Urban (or) Municipal waste
2. Industrial waste
3. Hazardous waste

#### Sources of urban waste:

Urban waste (or) municipal waste include the following wastes.

1) Domestic wastes: The wastages coming out from the houses.

Ex. Food waste, cloth, paper, polythene bags, glass bottles.

2) Commercial wastes: Wastes coming out from the shops, markets, hotels, office, industrials etc.

Ex. Packing materials, cans, bottles, polythene bags etc.

3) Construction wastes: Wastages of constructing materials.

Ex. Wood, concrete, debris.

4) Biomedical wastes: Wastages of organic materials.

Ex. Anatomical wastes, infection wastes.

**Sources of industrial waste:**

Industrial waste include the following wastes.

- Nuclear power plants: It generates radio active wastes.
- Thermal power plants: Produces fly ash
- Chemical industries: Produces hazardous and toxic materials.
- Other industries: Produce, packing materials, rubbish, Organic wastes, acids, alkalis, plastic, paper, wood,oil,paints,dyes etc.

**Sources of Hazardous waste:**

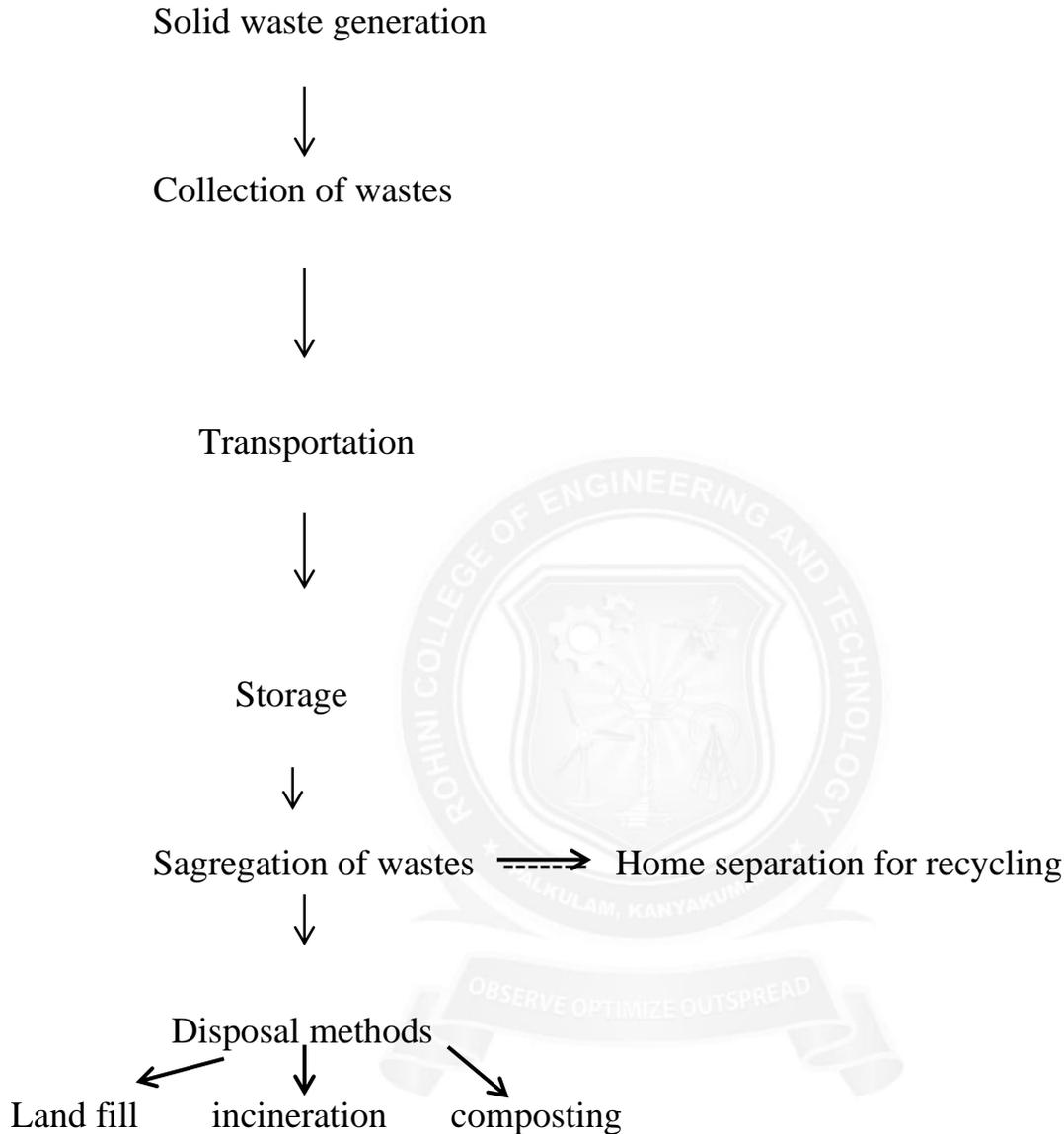
Chemical manufacturing company, petroleum refineries, paper mills, smelters, radio active substances, biological wastes and other industries.

**Consequence of solid waste of urban & industries:**

- Due to improper disposal of municipal solid wastes on the road side, it produces fuel smell
- Breeding of vector insects.
- Breeding of disease producing gems.
- Degradation of soil.
- Contamination of ground water.
- Burning releases smoke which cause cancer.
- Burning releases furans, dioxins and poly chlorinated biphenyis Which are harmful to human beings.

**Control measurement (or) process of solid waste management:**

Sollid waste management includes the waste generation, mode of collection, transportation, segregation of wastes and disposal techniques.

**Flow chart:****1) Land fill**

- Land fill is a solid waste management disposal site where solid wastes are allowed to decompose in a safe way.
- Municipal solid wastes, hospital, animal, plant wastes sludge, soil, powders, dusts are deposited and covered & disposal off in land fills.
- The land fill may be made above ground (or) below ground (or) above- below ground.
- Before filling, the site is lined with liners to prevent seepage and contamination of ground water.

- When the filling reaches a thickness of 1.5m, it is covered with earth of 6 inches.
- The wastes are decomposed by bacteria in 2-4 months.
- Bio gas produced during decomposition, it can be used for the generation of electricity.

### Advantages

- a. Simple & economical method
- b. Segregation is not required
- c. Land fill areas are used for other purpose
- d. Waste is returned to the soil as manure.

### Dis advantage

- a. Bad odour
- b. Mosquitoes& flies breed
- c. Large area is required
- d. Chances for fire.

## 2. Incineration

- Incineration is the burning (or) combustion of wastes. The plant used for incineration is called incinerator.
- Enormous amount of heat is produced and the heat is used to produce steam from H<sub>2</sub>O, steam generates electricity.
- The temp normally maintained in a combustion chamber is about 700<sup>0</sup>c-1000<sup>0</sup>.
- The combustible substance like rubbish, garbage, dead organisms are disposed by this method.

### Advantage

- a. It is a safe method from by hygienic point of view.
- b. Requires little space .
- c. It produces 3 MW of electricity per day by incinerating wastage 300 tonnes.

### Dis advantage

- a. Operating cost is high
- b. Needs – skilled person
- c. Formation of smoke , dust, ash need further disposal method due to which air
  - i. pollution may be caused.

### 3.Composting

- Composting is an aerobic microbial process which degrades organic matter into manure called composte.
- Bulk organic waste is converted into a manure by biological action.
- The combustable wastage are dumped in ground earthen trenches in layers of 1.5m and it is covered.
- Actinomycetesmicro organisms are introduced for active decomposition.
- Finally the decomposed products converted into powdery brown colouredodourless mass known as humus (or) manure.
- It is used in the agricultural field.

### Advantages

- a. It increases the water retention, & ion-exchange capacity of soil.
- b. Low cost.

### Disadvantage

- a. Non combustable substances are disposed separately
- b. Use of compost has not yet caught up with farmers & hence no assured in market.

### Vermicomposting

Although not significant in terms of waste diversion, vermicomposting is being used insome places. This method of composting uses a container of food scraps and a special kindof earthworm. Over time, the food is replaced with worm droppings, a rich brown matter that serves as an excellent natural plant food.

### 4. The Solid waste management stresses three R's type

They are

- Reduction in use
- Reuse
- Re cycling

This will reduce pollution.

## **SIGNIFICANCE OF SOLID WASTE MANAGEMENT**

In communities where appropriate sites are available, sanitary landfills usually provide the most economical option for disposal of non recyclable refuse. However, it is becoming increasingly difficult to find sites that offer adequate capacity, accessibility, and environmental conditions.

Landfills will always play a key role in solid-waste management. It is not possible to recycle all components of solid waste, and there will always be residues from incineration and other treatment processes that will eventually require disposal underground.

Landfills can actually improve poor-quality land. In some communities properly completed landfills are converted into recreational parks, playgrounds, or golf courses.

