

**Rizvi College of Arts Commerce and Science, Mumbai**

**Environmental Studies**

**F. Y. B. Com II Semester**

## **Chapter one**

# **Solid waste Management For Sustainable Society**

**By**

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# Waste

- ▶ Waste includes all items that people **no longer have any use** for which they either intend to get rid of or already discarded.
- ▶ **Solid Waste:** Solid waste means **any garbage, refuse, sludge from water treatment plant or air control facility plant and other discarded material** including solid, liquid and semi solid or gaseous material resulting from industrial, commercial, mining and agriculture operations and from community activities.
- ▶ Solid waste are any discarded material which can be in form of **solid, liquid or semi solid or containerized gaseous form.**



# Types of Solid Waste

- **Household waste:** Municipal waste, Biodegradable waste, packaging waste, agriculture waste.
- **Industrial waste:** Hazardous waste, Manufacturing waste, construction and demolition waste, mining waste, E-waste, End of life Vehicle and tyres.
- **Biomedical or hospital waste:** infectious waste



# 1. Household waste



- **Municipal waste including Household and commercial waste:** this garbage is generated mainly from residential and commercial area. With raising urbanization and change in the lifestyle the amount of municipal solid waste is increasing rapidly.
- **Municipal solid waste has been landfilled or recycled.** Wet waste is composted for making manure.
- Food waste, garden waste, paper cardboard are classified as biodegradable waste.
- **Packaging Waste:** Packaging is defined as any material which is used to contain protect, handle, diliver and present the goods. Plastic is one of the major packaging material. Recycle and reuse methods are used for waste management. Plastic and heavy metal pose the risk to environment.

## 2. Agriculture waste

- Agriculture waste is composed of organic waste, farmyard manure, plastic scrap machinery, fencing, pesticides, veterinary medicines.
- Leaking and improper storage of agriculture waste can major threat to environment.



### 3. Industrial waste



- Hazardous waste: Toxic, explosive, oxidizing, corrosive, flammable, Mutagenic and infectious waste are recognized as hazardous waste.
- The main disposal route for hazardous waste is landfilling, incineration or chemical treatment
- Require special treatment
- The waste kept separate and treated differently
- Manufacturing industrial waste: Arises from many industrial process, the product manufactured today becomes waste for tomorrow so proper manufacturing is important. Manufacturing process can help to reduce waste and minimize material and energy use.

## 4. Construction and demolishing waste

- Construction and demolishing waste Arises from construction of buildings, roads and civil infrastructure.
- Material: Concrete, bricks, woods, glass, metal, plastic, solvent, soil etc.
- Method of disposal: landfill, incineration and recycling



## 5. Mining waste

- arises from prospecting, extraction, treatment and storage of minerals.
- Material: Soil, rock, water, process chemical, remaining material
- Hazardous substance leaked from mines will create environmental hazards

## 6. E-Waste (Electronic waste)

- Electronic equipment consist of large variety of materials. Ranging from plastic, silver, gold to lead.
- Electronic waste consist waste toxic substance like mercury, lead, cadmium, arsenic, brominated flames etc.
- The toxic material don't break with time, its remain in nature for long time
- Valuable material like silver ,gold, platinum cobalt and indium cant be wasted
- Waste disposal: high tech method require to recycling the E-Waste but still open air burning and dumping on open site practices are followed in backward countries.

## 7. End life of vehicle (ELV) and tyres

- Vehicle as car and trucks are ELV
- 75% weight of vehicle is made of steel, aluminum and other metal which can be recycled
- Oil should properly seprated
- Plastic should be recycled

# Biomedical Waste / Hospital waste

- The waste is generated during the diagnostic, treatment and immunization of human being or animals.
- Waste: sharps, soiled waste, disposable, anatomical waste, discarded medicines, syringe, bandage, body fluid, human excreta,
- Source: Hospital, medicals, blood banks, nursing homes, animal houses, clinic, laboratories etc.
- Waste disposal: the waste is highly infectious so it should be handle with care and manage with scientific and discriminate manner.
- 10% to 25% waste is most hazardous can be injuries to human and animals



# METHODS OF SOLID WASTE DISPOSAL

- **Source reduction**: reduce the use of packaging like plastic, government ban on non biodegradable material help to reduce waste
- **Recycling and composting**: Electronic equipment, galss, metal, paper can be recycled and wet waste from household is used for making compost manure
- **Combustion/ incineration**: burning of solid waste in control way
- **Landfill**: the last remain solid waste send to landfill site



# EFFECT OF SOLID WASTE ON ENVIRONMENT

- Rapid urbanization and population growth resulted in high solid waste generation
- Methane gas released from landfill site generate problem such as green house gas affect and global warming
- Toxic fumes and matters create problem in environment
- Water pollution and soil pollution
- The chemical realised from industries make changes in soil property which result in loss of soil fertility
- plastic accumulated on soil makes disturbance to run off water and ground water, it will result in water scarcity

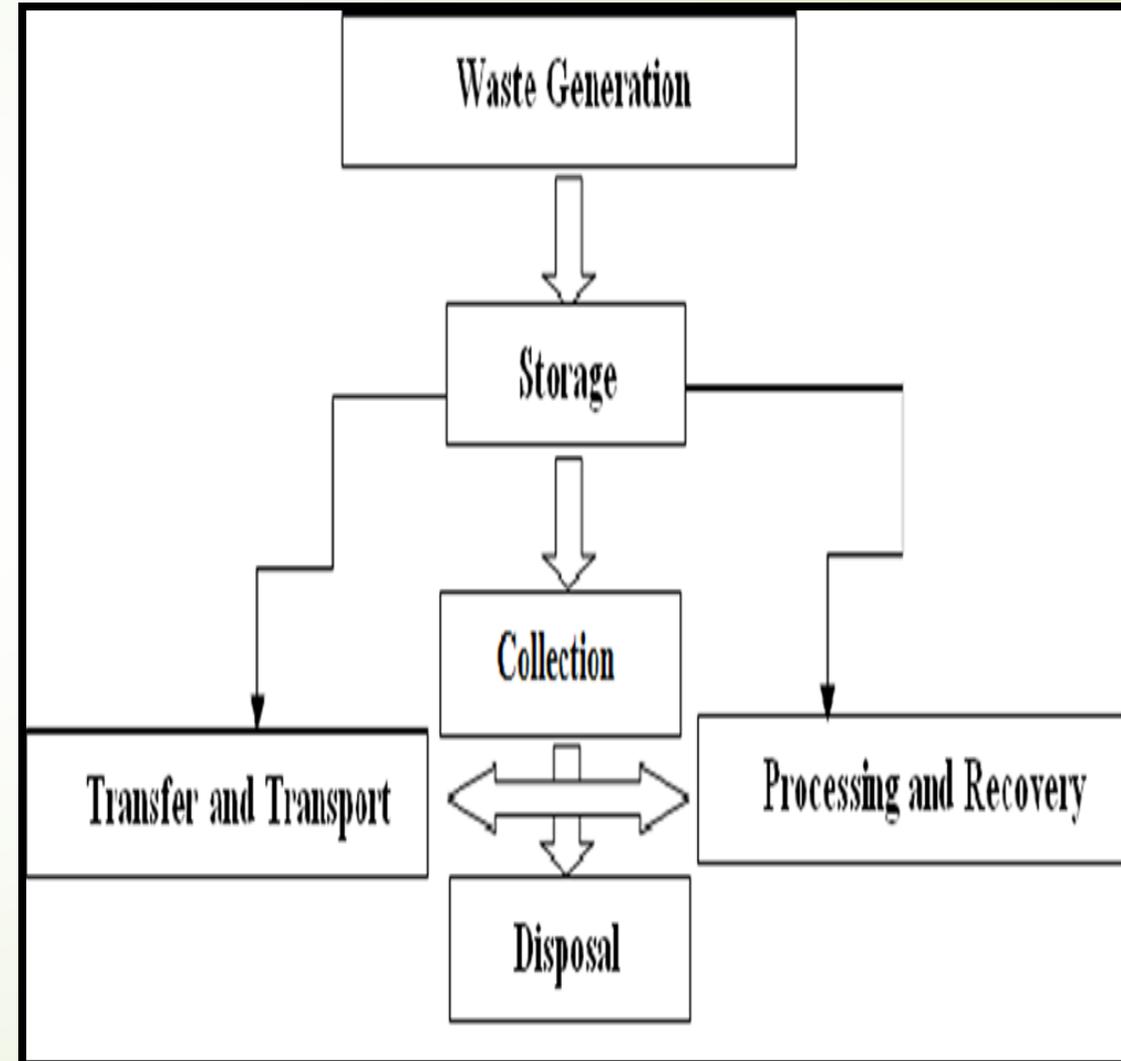


# Effects of solid waste on human health, animal and aquatic life

- ▶ Human health: dumping sites generate bad smell. Number of mosquitoes, rats, pigs, and other rodents will rise. These insects and rodents are responsible for diseases.
- ▶ Hazardous waste from industries create risk to human health
- ▶ Concentration of toxic material in food chain
- ▶ Toxic fumes and toxic material in water bodies destroys aquatic life
- ▶ Animals will migrate to other places
- ▶ Waste can obstruct runoff water which will result in flood
- ▶

# SOLID WASTE MANAGEMENT IN MUMBAI

- The Mumbai city is divided in three part: Island city, Eastern Suburban and Western suburban
- Municipal solid waste generation is 7025 ton per day
- Collection and transportation is responsibility of Greater Mumbai Municipal Corporation
- Municipal corporation have 688 compactor, 106 tipper, 89 dumper placer, 10 compactor
- mechanical sweeping of highway and beaches
- Slum adoption scheme is started to clean slums
- Solid waste management department is responsible for Waste management
- NGO are also part of this management



# ROLE OF CITIZEN IN WASTE MANAGEMENT IN MUMBAI

- ▶ 3 R:
- ▶ Reduce Waste: reduce the waste at first generation
- ▶ Reuse waste: using cloth carry bag can reduce plastic use
- ▶ Recycle Waste: wet waste can be recycled by composting and glass, metal, paper also can be recycled
- ▶ Segregate waste at source point



# QUESTION BANK

1. What is Solid waste? Classify its various types.
2. Discuss effect of solid waste on environment in detail.
3. Elaborate Solid waste management in Mumbai city in detail.
4. Discuss the harmful effects of solid waste on animals and human.
5. write the role of the citizens in solid waste management in detail.
6. Write a note on hazardous and non hazardous waste.
7. What are the problem of landfill site? Write in detail.
8. Write various methods of solid waste management in detail.

