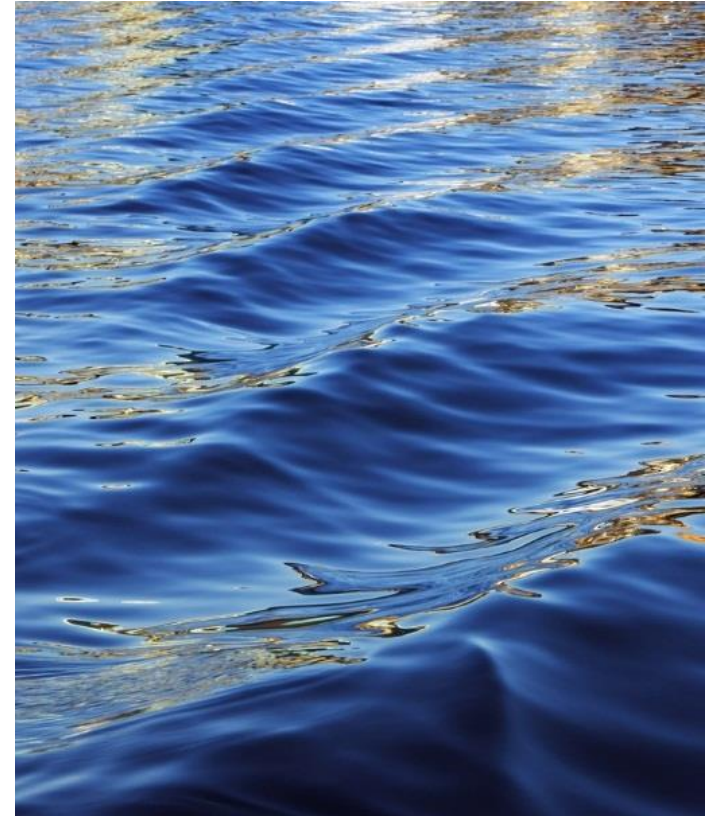


# ENV 101: Environmental Issues in Real Estate

## Topic 5: Waste Management

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# What is Waste Management?

- Waste management is the system of collection and disposal of waste at **minimum cost** and **preserving public health**.



# Waste Management Hierarchy:

- **Reduction:** The approaches used to lower the amount of waste production. A few methods of reduction are:
  - **Material** that produces less toxic waste can be substituted for currently used materials. Ex: shifting from solvent-based paints to water-based paints.
  - **Process** that results in less waste and increased efficiency can be substituted for processes that are currently being used. Ex: using dry pellets to remove paint instead of solvents.
  - **Equipment maintenance** will increase their lifetime and reduce the generation of waste.



# Waste Management Hierarchy:

- **Reuse:** Reuse is using a product **more than once**, either for the **same purpose** or for an **alternate purpose**. Reuse does not require reprocessing and therefore, has **lower energy requirements** than recycling. Ex: refilling bottles, bringing bag in grocery shop, etc.
- **Recycle:** Recycling means turning something old into something new. Most common recyclable products include paper, steel, aluminum, plastic, glass, etc.



# Waste Management Hierarchy:

- **Recovery:** In this stage, the waste is **incinerated** and the heat is used for energy. Though many combustible products are recyclable, but in most cases burning generates more energy than recycling. Incineration reduces the volume of refuse by **up to 90%**, leaving behind only ash, and resulting in less land for landfill disposal.
- **Ultimate Disposal- Landfill:** The last option is disposal. There are residuals from the previous processes and some materials are not simply recoverable and must be disposed of at the landfill.



# Elements of Solid Waste Management

- Storage and Collection
- Transfer and Transportation
- Processing and Recovery
- Final disposal

# Storage and Collection of Solid Waste

- **Communal Collection:** Users bring garbage to community bins located at public place and municipality pick it up at a set schedule. It leads to indiscriminate disposal of waste outside container.
- **Block Collection:** Users bring their waste to the collection vehicle.
- **Curb Side Collection:** Commonly seen in developed countries and used in wide streets. Users put their waste at curb side bins and a collection truck passes through the street and empties the containers.
- **House to House Collection:** Commonly seen in developing countries where the authority collects waste from door to door.

\*\*Under ground waste collection system:

<https://youtu.be/-xtXigjJ3o0?feature=shared>

# Storage and Collection of Solid Waste



Communal collection



Curb side collection



House to house collection



# Transfer and Transport of Solid Waste

- **Transfer station:** Transfer station is a place where solid waste is transferred from small vehicles to large trucks. When the distance between collection point and disposal site increases, wastes must be transferred into large vehicles to reduce cost.
- City corporation and municipalities of Bangladesh use different types of **waste collection vehicle** with capacity of 1.5 to 7 tons.



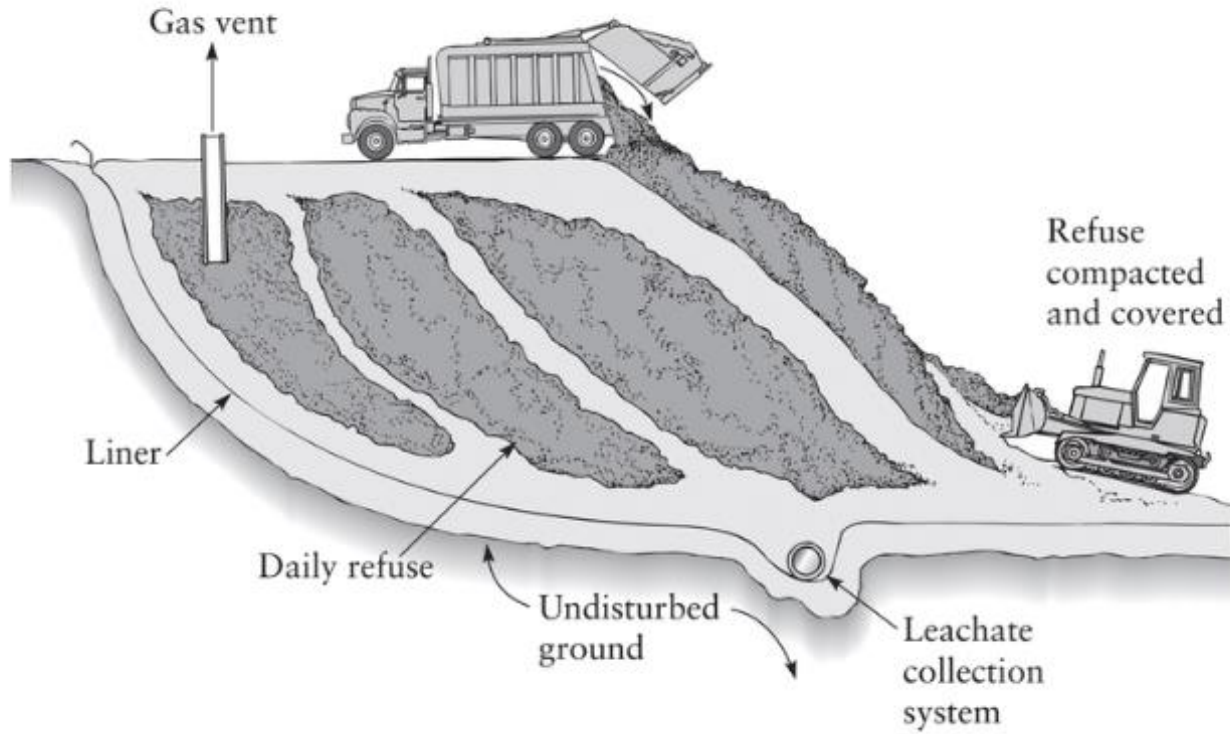
# Processing and Recovery of Solid Waste

- **Volume reduction:** Through compaction and incineration
- **Component separation:** Can be separated at source or manually after collection. Mainly recyclable wastes are separated.
- **Composting:** It is a biological process where organic wastes are decomposed by bacteria and other microorganisms.

# Disposal of Solid Waste

- Sanitary landfill is a controlled method of solid waste disposal. The wastes are disposed of as **compacted layers** and **covered with a layer of soil** at the end of each day.
- A well-designed landfill should prevent groundwater pollution, provide a gas (methane) venting system, have a leachate collection and treatment system, and should be located above 100-year flood level.
- If a landfill site is not properly planned, it may contaminate groundwater, soil and damage vegetation, spread disease vectors (rats, flies), release greenhouse gases (CO<sub>2</sub>, Methane), and may cause fire and explosion hazards, etc.

# Disposal of Solid Waste



# Disposal of Solid Waste



Matuail landfill site, Dhaka



Leachate pipe at Matuail landfill site

# THANK YOU!

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