



SOLID WASTE MANAGEMENT (8 Mark)

- Management of solid waste is very important in order to minimize the adverse effects of solid wastes. (2 Mark)

Types / sources of solid wastes (8 Mark)

- Solid waste can be classified as municipal, industrial, agricultural, medical, mining waste and sewage sludge.
- They main sources of industrial solid wastes are chemical industries, metal and mineral processing industries.

a) Urban waste Sources

- Domestic wastes – Food waste, Cloth, Waste paper.
- Commercial wastes – Packing material, cans, bottles, polythene.
- Construction Wastes – Wood, concrete, debris.
- Bio medical wastes – Anatomical wastes, infectious wastes.

b) Industrial waste Sources

- Nuclear power plants – generates radioactive wastes
- Thermal power plants – produces fly ash in large quantities

c) Chemical industries

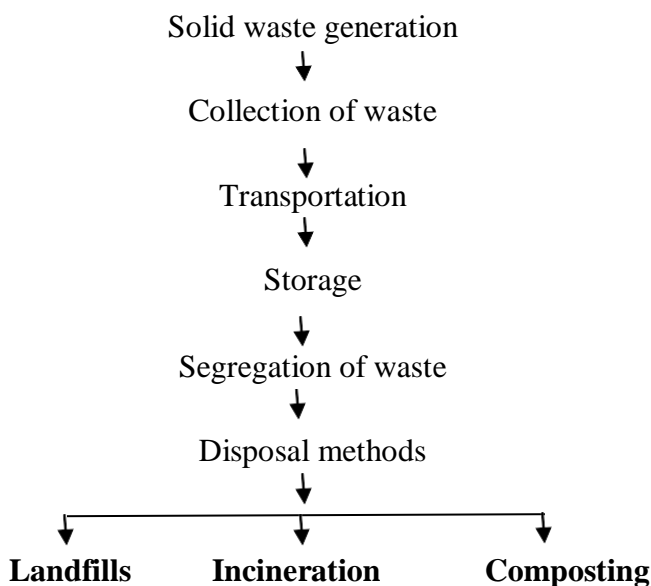
- Produces large quantities of hazardous and toxic materials

d) Other industries

- They are produces packing materials, rubbish, organic waste, acids, alkalis, rubber, plastic, paper, glass, wood, oils, paints, dies etc.,

Steps involved (control method) in solid waste management (8 Mark)

Flowchart



- Collection waste from various sources



- Transportation – to transfer the collected waste to the destination point
 - Storage – To store the collected waste mean while time of the disposal
 - Segregation – Home separation for recycling
 - Disposal methods – It includes 3 methods
- a) **Land fill**
 - b) **Incineration**
 - c) **Composting**
 - a) **Land fill**
 - Waste materials are dumped in low lying areas
 - b) **Incineration**
 - Burning of solid waste material and reducing the volume, weight and residual ash
 - c) **Composting**
 - Process of converting the organic solid waste material to a kind of fertilizer manure by the anaerobic bacterial activity.
-

HAZARDOUS AND MANAGEMENT

Definition: (2 Mark)

Hazardous management is the process of identifying, assessing, and controlling risks associated with hazardous substances or activities to ensure safety and protect health and the environment.

Hazardous management involves the identification, assessment, and control of risks associated with hazardous substances and processes. Proper management is crucial to ensure safety, protect health, and minimize environmental impact. Here’s a general overview of key components in hazardous management:

1. **Identification:** Recognize and list all hazardous substances or processes present in the workplace or environment. This includes chemicals, biological agents, and physical hazards.
2. **Risk Assessment:** Evaluate the risks associated with these hazards. This involves understanding the potential impact of exposure, the likelihood of incidents, and the severity of consequences.
3. **Control Measures:**
 - **Engineering Controls:** Modify equipment or work processes to reduce exposure (e.g., ventilation systems, safety guards).
 - **Administrative Controls:** Implement procedures and policies to manage risks (e.g., training, job rotation, safety protocols).
 - **Personal Protective Equipment (PPE):** Provide appropriate PPE to protect individuals from exposure (e.g., gloves, masks, protective clothing).



4. **Training and Education:** Ensure that all employees are trained in recognizing hazards, understanding safety procedures, and using protective equipment properly.
5. **Emergency Planning:** Develop and maintain emergency response plans for potential incidents. This includes having procedures in place for spills, leaks, or other emergencies and conducting regular drills.
6. **Monitoring and Review:** Regularly review and update safety measures and risk assessments to ensure they remain effective and reflect any changes in processes or regulations.
7. **Regulatory Compliance:** Adhere to local, national, and international regulations and standards related to hazardous materials and safety.
8. **Documentation:** Keep detailed records of all safety procedures, training, incidents, and inspections to track compliance and identify areas for improvement.

Effective hazardous management helps prevent accidents and health issues, ensuring a safer working environment and minimizing environmental impact. If you're dealing with specific types of hazards or need advice on particular regulations, feel free to ask!

E-WASTE MANAGEMENT

Definition

E-waste management is the process of collecting, recycling, and safely disposing of discarded electronic devices to reduce environmental impact and recover valuable materials. It involves sorting e-waste, recycling reusable components, and properly handling hazardous substances.

E-waste management involves the systematic handling of electronic waste to minimize environmental and health impacts. It encompasses several key processes:

1. **Collection and Sorting:**
 - **Collection:** E-waste is gathered from various sources such as households, businesses, and institutions.
 - **Sorting:** The collected e-waste is categorized based on type, material, and hazardous content to streamline processing.
2. **Recycling and Recovery:**
 - **Recycling:** Valuable materials like metals (e.g., gold, silver, copper) and plastics are extracted from e-waste and processed for reuse.
 - **Recovery:** Specialized techniques are used to recover rare or precious elements from electronic devices.
3. **Safe Disposal:**



- **Disposal:** Non-recyclable or hazardous components (e.g., batteries, mercury-containing devices) are disposed of following regulations to prevent environmental contamination.
 - **Treatment:** Some components may be treated to neutralize hazardous substances before disposal.
4. **Regulation and Compliance:**
- **Adherence to Laws:** Following local and international regulations governing e-waste management, such as the Basel Convention, to ensure safe and responsible practices.
 - **Certification:** Engaging with certified e-waste recyclers who meet standards for environmental and safety practices.
5. **Public Awareness and Education:**
- **Awareness Campaigns:** Educating the public about the importance of proper e-waste disposal and the environmental impacts of improper handling.
 - **Programs:** Implementing take-back programs and drop-off points for consumers to dispose of e-waste responsibly.

Effective e-waste management helps reduce the environmental impact of electronic devices, conserves natural resources, and mitigates potential health risks associated with hazardous substances found in e-waste.