

CHE 110: Environmental Studies

Unit - 4

Environmental pollution

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LAND POLLUTION (SOLID WASTE MANAGEMENT)

Introduction

- ❑ Solid waste is that material (such as domestic trash, garbage, metal scrap etc.)
- ❑ Arises from various human activities and which is normally discarded as useless or unwanted.
- ❑ It is responsible for land pollution in urban and industrial areas.

❑ What is solid waste ?

- ❑ Solid waste is the unwanted or useless solid materials generated from combined residential, industrial and commercial activities in a given area.

❑ Why Management ?

- ❑ Management of solid waste reduces or eliminates adverse impacts on the environment and human health and supports economic development and improved quality of life.

Solid Waste Management (SWM)

❑ Garbage

- putrescible solid waste: Contains organic matter capable of being decomposed by microorganisms
- Constituents produced during the preparation or storage of meat, vegetables, etc.

❑ Rubbish

- Non-putrescible solid waste constituents, either combustible or noncombustible.
- Combustible waste includes paper, wood, scrap, rubber, leather, etc.
- Non-combustible wastes are metals, glass, ceramics etc.

❑ Refuse

- All decomposing and non-decomposing combustible and non-combustible solid wastes such as garbage, ashes, paper, cans, wood scraps, plastic etc.

Important source of solid waste

❑ Domestic garbage and waste

- Household wastes such as plastic, paper, glass pieces, metal objects etc.

❑ Industrial wastes

- Include chemicals, paints, sand, metal ore processing, fly ash, sewage treatment sludge,

❑ Commercial wastes

- includes paper fibers, plastic, packaging material generated by industries.

❑ Mining wastes

- Result from mining activities. eg. Heavy metals.

❑ Radioactive wastes

- Nuclear explosions, nuclear testing, use of radioactive substances in medical and scientific research etc.

Important source of solid waste

❑ Agricultural wastes

- Mainly farm animal manure and crop residues.

❑ Hospital waste

- Commonly contains disposable, syringe, needles, used cotton plugs, infected waste etc..

❑ Industrial wastes

- Include chemicals, paints, sand, metal ore processing, fly ash, sewage treatment sludge,

❑ Commercial wastes

- includes paper fibers, plastic, packaging material generated by industries.

Effects of Solid Waste

- ❑ Solid waste helps disease-causing organisms such as mosquitoes, flies, etc., to thrive freely and increase in population.
- ❑ It runs off with rainwater and mixes with the nearby water bodies causing water pollution.
- ❑ Burning of solid waste leads to air pollution.
- ❑ Radioactive substances present in solid waste cause number of diseases in human beings.
- ❑ Solid waste reduces the aesthetic value of land.
- ❑ Non-biodegradable solid wastes such as polythene, plastic, rubber, etc., release toxic gases when burnt hence causing air pollution.

Solid Waste...

❑ Control measures of Solid waste

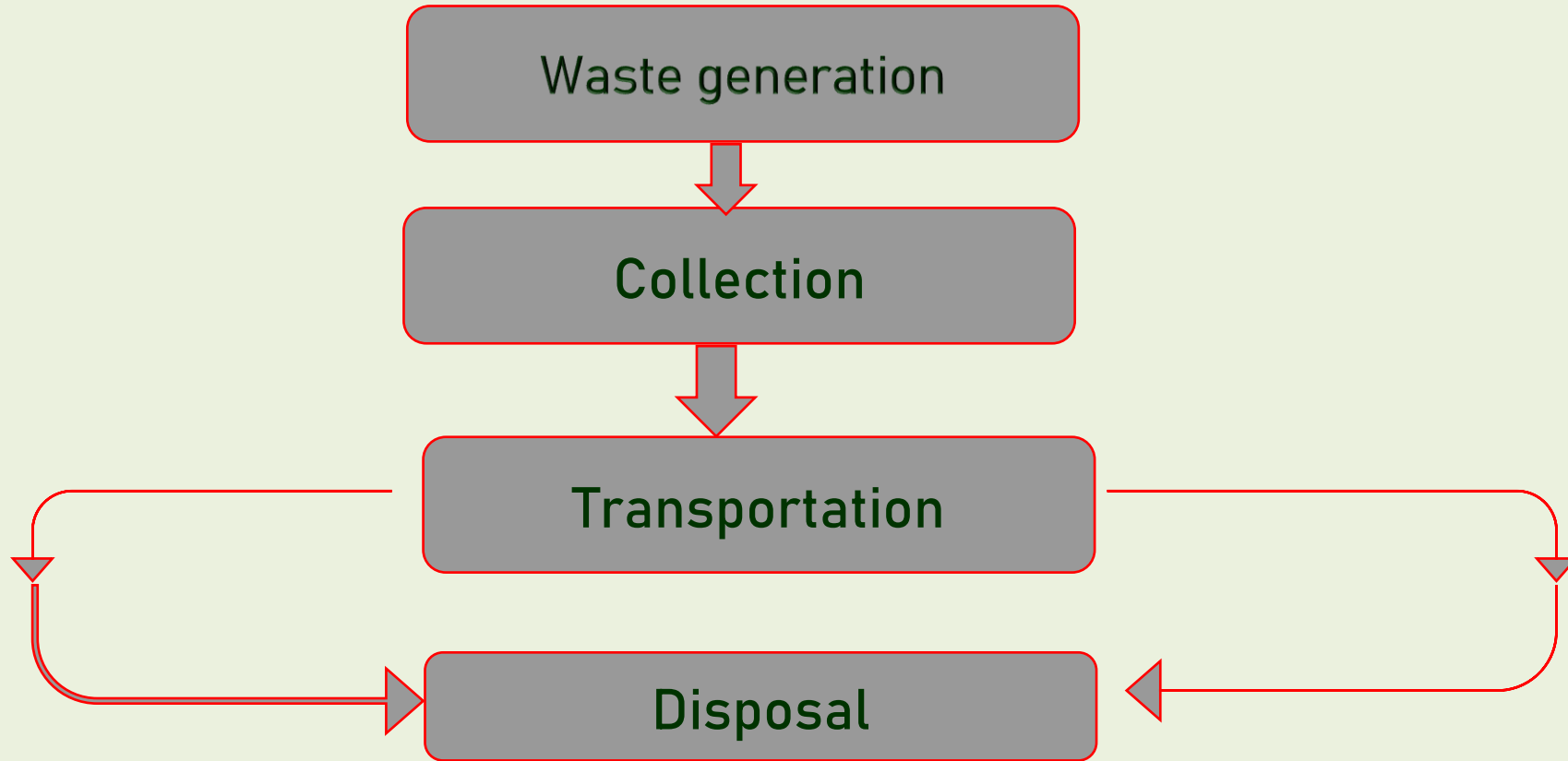
- Indiscriminate disposal of solid wastes-especially of hazardous waste causes adverse environment effects.
- The main objective of solid waste management is to minimize these adverse effects before it becomes too difficult to rectify in the future.

❑ Treatment of Solid Waste

- ✓ Collection of solid waste
- ✓ Transportation of solid waste
- ✓ Disposal of solid waste



Solid waste management





❑ Collection of solid waste

- ✓ Large number of dustbins must be provided to enable proper collection of solid wastes according to categories.
- ✓ Door to door collection of domestic garbage, is the most common and popular practice.
- ✓ Rag pickers contribute to waste management. They segregate recyclable materials from other wastes and hence save the cost and time.

❑ Transportation of solid waste

- ✓ Transportation of solid wastes from urban areas to the dumping grounds with the help of tractors, trucks



Waste Disposal Methods

Open Dumping



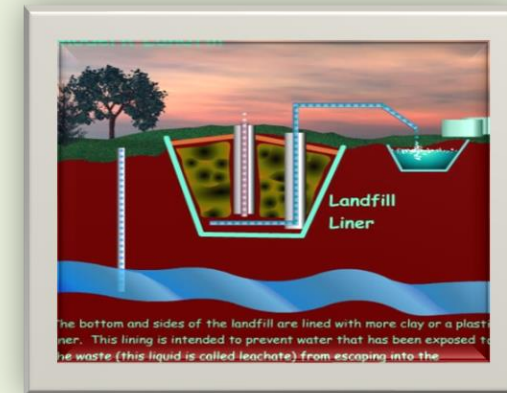
Ocean Dumping



Incineration



Land Fill



Composting



5 R's of Solid Waste Management

❑ Over-consumption and waste of commodities can be checked by adopting the five R's of consumption.

- ✓ Refuse
- ✓ Reduce
- ✓ Reuse
- ✓ Repair
- ✓ Recycle



Role of an Individual in Prevention of Environmental Pollution

- ✓ Less use of automobiles and Use of bicycle for short distances
- ✓ Plantation of more and more trees and Proper and appropriate utilization of water
- ✓ Reduction in dumping of waste on land
- ✓ Minimizing the use of insecticides, pesticides, and chemical fertilizers in agriculture
- ✓ Saving electricity and using natural renewable energy resources as far as possible
- ✓ Promoting environmental awareness and actively participating in public hearing on environmental issues
- ✓ Keeping the city and surroundings clean
- ✓ Use of paper and cloth bags instead of using polythene bags
- ✓ Adopting and popularizing renewable energy resources

<https://www.youtube.com/watch?v=nL354fxAfBk>
https://www.youtube.com/watch?v=IS0_FCBzI_w