Safe Disposal of Wastes

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Solution 1. The important steps in waste management are:

1. Dematerialization of production by reducing the amount of raw materials use and energy used in production.
2. Recycling wastes back into the production process.
3. Recovery of some ingredients and / or treatment of wastes.
4. Dispersal, dumping or storage.

Solution 2. Following are the measures adopted to prevent the spread of disease from sewage water:

- Sewage water must be disposed off in a suitable manner to prevent large scale outbreak of diseases and toxicity to living organisms.
- They should not be allowed to collect in the open.
- Sewage should be treated in sewage treatment plants wherein the pathogens are destroyed.

Solution 3. Two advantages of garbage incineration are:

1. Incineration reduces the weight and volume of the waste by as much as 95%.
2. It helps in the treatment of clinical wastes and toxic pathogens.
3. It is designed in such a way that it can be also used to produce electricity. (Write any two)

Solution 4. Composting is an effective way of disposing of wet garbage from households and biomass wastes from gardens.

The processes involves in composting are:

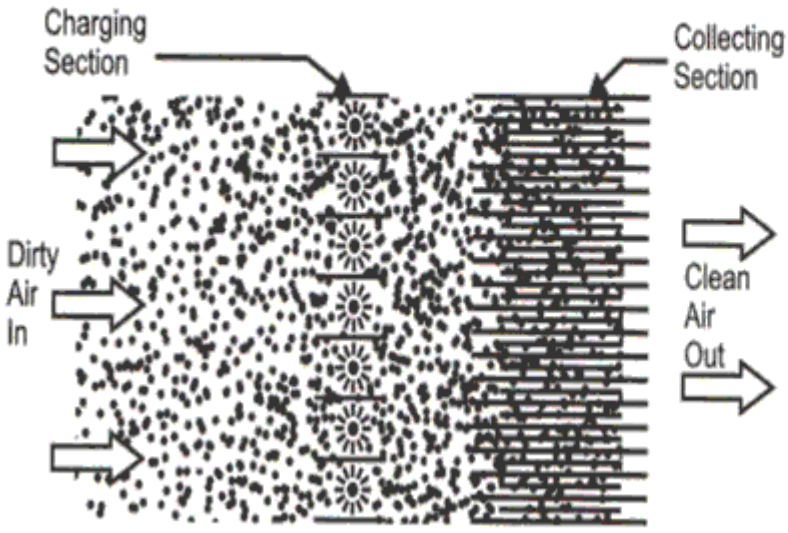
- Vegetable peels, fruit peels, food-scraps, twigs, dry leaves, grass clippings can be dumped into a pit or a big bin.
- Then soil is spread over this pile.
- Earthworms can be introduced into the compost pit to decompose the organic matter which enrich the compost. This method is called vermi-composting.
- The soil microbes break down the organic matter.
- The compost obtained is rich organic manure for the plants in the garden.

Solution 5. Sewage water is treated in three steps:

1. **Primary treatment** – In this, the coarse and fine suspended , solids are removed by sedimentation, coagulation and precipitation.
2. **Secondary treatment** – It is essentially a biological treatment process which involves the removal of colloidal and dissolved organic substances and some toxic chemicals.
3. **Tertiary treatment** – Here, excess nutrients are removed to allow the reuse of that water.

Solution 6.

An electrostatic precipitator removes particulates of less than 50mm size. The particulates are electrically charged and then attracted to oppositely charged plates for collection. The vibration of these plates removes the particulate matter to the bottom and the pollutant free air then escape to join the atmosphere.



Diagrammatic view of the working of electrostatic precipatator

Solution 7. Segregation is the separation of wet and dry wastes in order to dispose them safely. Household wastes consist of organic biodegradable matter as well as non-biodegradable matter. They should be segregated from each other using separate bins. Wherever possible, the non-biodegradable matter is recycled and used.
The organic biodegradable matter i.e. wet waste must be separated from other dry wastes. They are collected by municipal workers and transported to a landfill.

Solution 8. Two uses of incineration are:

1. Incineration reduces the weight and volume of the waste by as much as 95%.
2. It helps to destroy pathogens and toxins using high temperature, thereby playing role in the treatment of clinical wastes and certain hazardous wastes.

Solution 9. Most liquid wastes contain both dissolved and suspended matters. Treatment of such effluent involves the removal of contaminants and is done to prevent any adverse effects on receiving water or allow its reuse. Three steps are usually followed in the treatment of effluents:

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Solution 10. The two ecofriendly ways of treating kitchen wastes are:

1. Composting
2. Segregation of wet and dry waste.

Solution 11.
Two benefits of composting are:

1. It is an eco-friendly method of disposing wet garbage from households and biomass wastes from gardens.
2. The compost obtained acts as rich organic manure for the garden plants.

Solution 12.
(i) (a) microorganisms
(ii) (d) garbage and sewage sludge
(iii) (c) both (a) and (b)
(iv) (b) secondary treatment