What is solid waste?

Solid waste is the unwanted or useless solid materials generated from human activities in residential, industrial or commercial areas. It refers to any garbage or refuse (Municipal Solid Waste). It also includes sludge from a freshwater treatment plant, or air pollution control facility and other discarded materials. It can be solid, liquid, semi-solid, or contained gaseous material from industrial , commercial, mining ,and agricultural operations ,and from community activities.

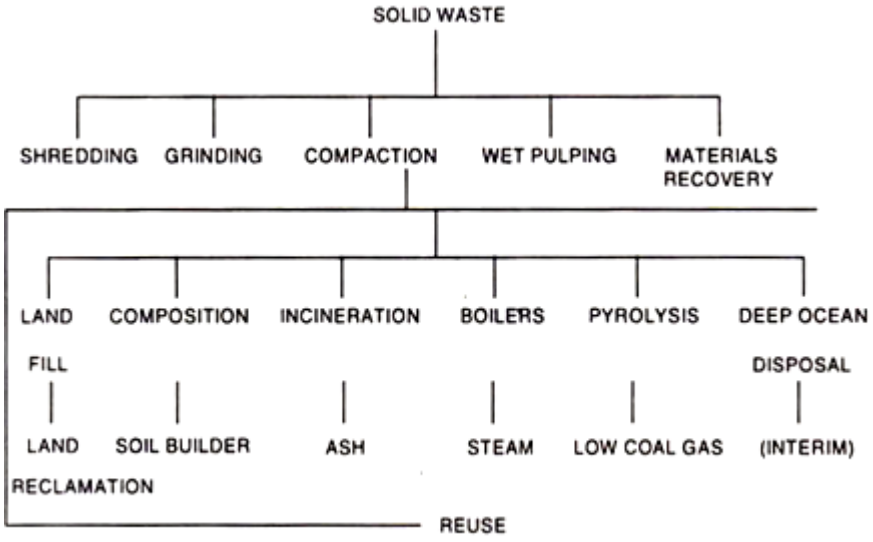

Fig. 5.1. Treatment/disposal sequence for solid waste.

Effects of Processing Solid Waste

- One of the major environmental problems is the collection, management and disposal of the MSW in the urban areas. Lack of MSW management and disposal is leading to significant environmental problems. This includes soil, air water, and aesthetic pollution. Such environmental problems are associated with human health disorder, due to the increase in greenhouse gas emissions

- Disposal of garbage as solid wastes is a stengent and widespread problem in both urban and rural areas in several developing countries. Several Canals and drains as open places are widely used to dump varieties of garbage as a source of domestic organic and inorganic waste. Due to the absence of continuous garbage-collection systems, convenient landfills, open canals and drains are being blocked by dumping huge amounts of solid and garbage wastes. Thus, they are no longer in function.
- Increasingly tighter regulations in terms of organic solid waste, as well as increasing the demand for renewable chemicals and fuels, recently, are pushing the industrial manufacturers and the environmentalists toward higher sustainability to improve cost-effectiveness and meet customers' demand. During the past few years, valorization of food organic waste is one of the important current research areas.

- The health risks associated with illegal dumping are significant. Areas used for open dumping may be easily accessible to people, especially children, who are vulnerable to the physical (protruding nails or sharp edges) and chemical (harmful fluids or dust) hazards posed by wastes.
- Rodents, insects, and other vermin attracted to open dump sites may also pose health risks. Dump sites with scrap tires provide an ideal breeding ground for mosquitoes, which can multiply 100 times faster than normal in the warm stagnant water standing in scrap tire causing several illnesses.

Air pollution

- Dust generated from on-site vehicle movements, and placement of waste and materials

Water pollution

- Runoff from open dump sites containing chemicals may contaminate wells and surface water used as sources of drinking water open dumping can also impact proper drainage of runoff, making areas more susceptible to flooding when wastes block ravines, creeks, culverts, and drainage basins & also contamination of groundwater resources and surface water from leachate emissions.

Soil Contamination

- Permanent or temporary loss of productive land

- Due to poor waste management by the authorities, availability of clean and safe water is minimized because of people threw rubbish at the river and the quality of living will decrease. Furthermore, health issue such as dengue, fever, Hepatitis, tuberculosis, malaria , pneumonia, and also poor sanitation due to poor waste management.

Effects of Incineration:

a. Incineration leads to air pollution unless the plant is designed, equipped and operated to comply with air pollution standards.

b. Typical air pollutants from incineration are SO_2, flyash, HCl and organic acids.

c. Operation cost is high. Ordinary incinerators cannot be used for radioactive wastes.

Open Dumping Effects

a. Public health hazards are caused by the breeding of flies, mosquitoes, rats and other pests.

b. Obnoxious gaseous and particulate matter are produced by burning of the combustible solid wastes, resulting in air pollution.

c. Open dumping requires large land areas which further aggravates the problem of land shortage for human habitation.

Effects of Landfilling:

Large land area is required. Continuous evolution of foul smell at the site of disposal.

Use of insecticide is required. Covering of waste solid with good earth may sometimes difficult. It may also cause ground water pollution.