

SOLID WASTE DISPOSAL – A BURNING PROBLEM TO BE RESOLVED

A. Introduction – The disposal of solid waste is a problem. This problem continues to grow with the growth of population and development of industries. Disposal of waste in open pits has become routine in majority of places.



Semisolid or solid matter that are created by human or animal activities, and which are disposed because they are hazardous or useless are known as solid waste. Most of the solid wastes, like paper, plastic containers, bottles, cans, and even used cars and electronic goods are not biodegradable, which means they do not get broken down through inorganic or organic processes. Thus, when they accumulate they pose a health threat to people, plus, decaying wastes also attract household pests and result in urban areas becoming unhealthy, dirty, and unsightly places to reside in. Moreover, it also causes damage to terrestrial organisms, while also reducing the uses of the land for other, more useful purposes.

B. Classification of Solid waste – Solid wastes typically may be classified as follows:

- * Garbage: decomposable wastes from food

- * Rubbish: non-decomposable wastes, either combustible (such as paper, wood, and cloth) or noncombustible (such as metal, glass, and ceramics)

* Ashes: residues of the combustion of solid fuels

* Large wastes: demolition and construction debris and trees

* Dead animals

* Sewage-treatment solids: material retained on sewage-treatment screens, settled solids, and biomass sludge

* Industrial wastes: such materials as chemicals, paints, and sand

* Mining wastes: slag heaps and coal refuse piles

* Agricultural wastes: farm animal manure and crop residues.

C. Disposal Methods – Disposal of solid wastes on land is by far the most common method in most of the countries and probably accounts for more than 90 percent of the world's municipal refuse. Incineration accounts for most of the remainder, whereas composting of solid wastes accounts for only an insignificant amount. Selecting a disposal method depends almost entirely on costs, which in turn are likely to reflect local circumstances.



* Sanitary landfill is the cheapest satisfactory means of disposal, but only if suitable land is within economic range of the source of the wastes; typically, collection and transportation account for 75 percent of the total cost of solid waste management.

* In a modern landfill, refuse is spread in thin layers, each of which is compacted by a bulldozer before the next is spread. When about 3 m (about 10 ft) of refuse has been laid down, it is covered by a thin layer of clean earth, which also is compacted.

* Pollution of surface and groundwater is minimized by lining and contouring the fill, compacting and planting the cover, selecting proper soil, diverting upland drainage, and placing wastes in sites not subject to flooding or high groundwater levels.

* Gases are generated in landfills through anaerobic decomposition of organic solid waste. If a significant amount of methane is present, it may be explosive; proper venting eliminates this problem.

D. Methods to Reduce Waste – As the World economy grows so does its production of wastes. As regulation of international trade in waste has been tightened (Basel Convention), and public opinion has become increasingly environmentally conscious, industrialized countries have had to develop means to deal with the waste they produce. Traditional waste management strategies include reusing materials, recovering materials through recycling, incineration and landfills. In recent years recycling has become the preferred choice of waste disposal for many industries. On the commercial level, government

regulation usually works to the advantage of big firms and to the disadvantage of small ones. Due to a shortage of research on its possible economic and environmental spillovers, the practice of reusing materials remains as yet a gray area. Each method of waste disposal has its drawbacks.

1) Resource Recovery

Numerous thermal processes, now in various stages of development, recover energy in one form or another from solid waste. These systems fall into two groups: combustion processes and pyrolysis processes.

* A number of companies burn in-plant wastes in conventional incinerators to produce steam. A few municipalities produce steam in incinerators in which the walls of the combustion chamber are lined with boiler tubes; the water circulated through the tubes absorbs heat generated in the combustion chamber and produces steam.

* Pyrolysis, also called destructive distillation, is the process of chemically decomposing solid wastes by heat in an oxygen-reduced atmosphere. This results in a gas stream containing primarily hydrogen, methane, carbon monoxide, carbon dioxide, and various other gases and inert ash, depending on the organic characteristics of the material being pyrolyzed

2) Recycling

* The practice of recycling solid waste is an ancient one. Metal implements were melted down and recast in prehistoric times. Today, recyclable materials are recovered from municipal refuse by a number of methods, including shredding, magnetic separation of metals, air classification that separates light and heavy fractions, screening, and washing.

* Another method of recovery is the wet pulping process: Incoming refuse is mixed with water and ground into a slurry in the wet pulper, which resembles a large kitchen disposal unit. Large pieces of

metal and other non-pulpable materials are pulled out by a magnetic device before the slurry from the pulper is loaded into a centrifuge called a liquid cyclone. Here the heavier non-combustibles, such as glass, metals, and ceramics, are separated out and sent on to a glass- and metal-recovery system; other, lighter materials go to a paper-fiber-recovery system. The final residue is either incinerated or is used as landfill.

* Increasingly, municipalities and private refuse-collection organizations are requiring those who generate solid waste to keep bottles, cans, newspapers, cardboard, and other recyclable items separate from other waste. Special trucks pick up this waste and cart it to transfer stations or directly to recycling facilities, thus lessening the load at incinerators and landfills.

E. Further discussions on problems solid waste disposal - Open dumping and burning of domestic and industrial waste is a common phenomenon in many developing countries. This often takes place at waste disposal sites and can be the result of spontaneous combustion or deliberate attempts to reduce waste volume. As well as, the health hazards posed by the vermin and un-supervised scavenging, the open burning of waste leads to toxic releases to both ground water and air. These contribute to lasting damage to the environment and have serious implications for the health of local people and livestock

There is a strong movement in many countries to reduce the volume of wastes to be dumped. The increase of composting sites is an indication that organic fraction of garbage can be converted into a useful and commercial product with a higher value. For inert materials, technologies are needed to use wastes as raw materials to produce new products. Development of new materials from recycled materials will also encourage sorting of solid wastes. "Zero Waste" movement also targets industries and waste exchange. 40 % of landfilled wastes in most of the countries come from building materials and this suggests that such wastes can be avoided by developing long-lasting materials and dwellings to reduce wastes from need to rebuild. Other alternatives and efforts are:

* Onsite treatment and utilization will reduce need for transport.

* Waste minimization is a socially desirable goal.

* Subsidy on products generated from recycled materials will encourage socio-economic changes.

* Centers with technologies that use collected waste materials are needed.

* Wastes that have severe risks and excessive problems in disposal should be identified and those which cannot be neutralized may need to be restricted at the point of creation or entry.

* A database on wastes that are available will provide information to possible users of wastes.

Source : <http://saferenvironment.wordpress.com/2009/08/06/solid-waste-disposal-a-burning-problem-to-be-resolved-to-save-environment/>