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RECENT TRENDS IN WASTE MANAGEMENT

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Abstract : Waste management has emerged as one of the greatest challenge facing the society and the environment. The volume of waste being generated continued to increase at a faster rate that the ability of society. Waste management serviced has increasingly become inadequate, as evidenced by the rise in dumping of the waste materials.

Although the legislative framework for managing waste is in place, concern was raised at the non-enforcement of the legislation. The current legislation emphasize on end of pipe approach rather than on waste minimization and prevention. Research on waste management should focus on reducing waste generation at source. End of pipe solution should be substituted by cleaner production system thereby reducing waste generation at source. Other waste management initiatives such as environmental accounting and waste trading should be introduced.

Keywords:

INTRODUCTION

Waste is unwanted or useless material, also known as Rubbish, Trash, Refuse, Garbage, and Junk.

Types of waste

1. Solid waste
2. Liquid waste
3. Gaseous waste

Waste streams classified by source

Source	Facilities, activities, or locations where wastes are generated	Types of solid wastes
Residential	Single-family and multifamily dwellings; low-,medium, and high-density apartments	Food wastes, paper, cardboard, plastics, textiles, yard wastes, wood, ashes, street leaves, special wastes (including bulky items, consumer electronics, white goods, universal waste) and household hazardous waste.
Commercial	Stores, restaurants, markets, office buildings, hotels, motels, print shops, service stations, and auto repair shops.	Paper, cardboard, plastics, wood, food wastes, glass, metal wastes, ashes, special wastes, hazardous wastes
Institutional	Schools, universities, hospitals, prisons, governmental centers	Same as commercial, plus biomedical
Industrial (non-process wastes)	Construction, fabrication, light and heavy manufacturing, refineries, chemical plants, power plants, demolition	Same as commercial
Municipal Solid waste	All of the preceding	All of the preceding

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Construction and Demolition	New construction sites, road repair, renovation sites, razing of buildings, broken pavement	Wood, steel, concrete, asphalt paving, asphalt roofing, gypsum board, rocks and soils.
Industrial	Construction, fabrication, light and heavy manufacturing, refineries, chemical plants, power plants, demolition	Same as commercial, plus industrial process wastes, scrap materials
Agricultural	Field and row crops, orchards, vineyards, dairies, feedlots, farms	Spoiled food, agricultural waste, hazardous waste

Targets and the waste hierarchy

The latest trend is developed for waste management strategies based around the concept of the waste hierarchy (figure 1). Under this approach, waste avoidance is argued to be preferable to reuse, reuse to recycling, and so on. Disposal is seen to be the least desirable option. In compliance with this approach, many jurisdictions have set targets for diverting waste, some going so far as to aim for zero waste to landfill. This approach is inconsistent with good policy principles.

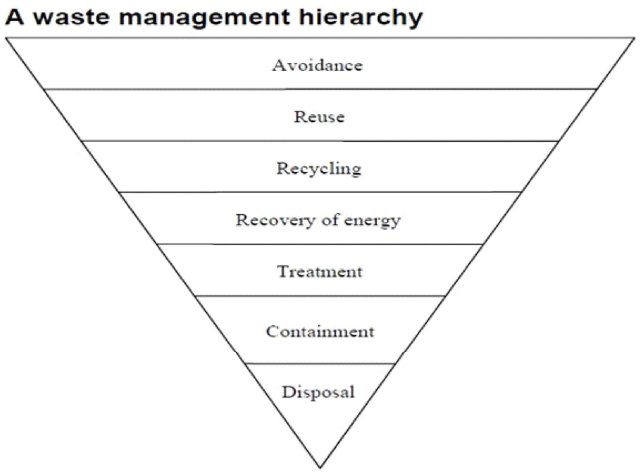


Fig: 1

Waste Diversion & Waste Minimization

The three R's are commonly used terms in waste management; they stand for "reduce, reuse, and recycle". As waste generation rates have risen, processing costs increased, and available landfill space decreased, the three R`s have become a central tenet in sustainable waste management efforts.

The concept of waste reduction, or waste minimization, involves redesigning products or changing societal patterns of consumption, use, and waste generation to prevent the creation of waste and minimize the toxicity of waste that is produced.

Common examples of waste reduction include using a reusable coffee mug instead of a disposable one, reducing product packaging, and buying durable products which can be repaired rather than replaced. Reduction can also be achieved in many cases through reducing consumption of products, goods, and services. The most effective way to reduce waste is by not creating it in the first place, and so reduction is placed at the top of waste hierarchies. In many instances, reduction can be achieved through the reuse of products. Efforts to take action to reduce waste before waste is actually produced can also be termed pre-cycling.

WASTE TREATMENT AND DISPOSAL

Following are the latest trends for the waste disposing and their treatment:-

1. Compositing:

i. Waste preparation (separation method)
ii. Digestion
iii. Produce-up gradation (for better marketing prospects)

2. Sanitary Land filling :

Land filling is the most common and economic method of solid waste disposal in many countries.

An ideal landfill should satisfy the following criteria:-

i. It should be cheap accessible and at a reasonable distance
ii. It should be at least 1_(2)^1 KM downwind from the commercial and residential neighboring area.
iii. It should be reasonably levelled, clear and well drained, with capacity of use for at least three years.
iv. Its soil should be of low permeability so that it can be used as satisfactory cover material.
v. It should be well above the ground water table so that the underground water supplies are not polluted.
vi. The site selected for land filling should not be deleterious or offensive to the surrounding

environment. It should be consistent with the topography, climate condition, hydro geological requirements and economical consideration.

The planning of a sanitary land fill operation should be based on the following consideration:-

i. The quality and nature of waste to be treated.
ii. Overall suitability of the land for such operation.
iii. Economic consideration.
iv. Public health consideration.
v. Proper design.

THERMAL PROCESS

1. Incineration

The solid organic waste are subjected to controlled combustion as to convert them into incombustible residues and gaseous products.

Advantages

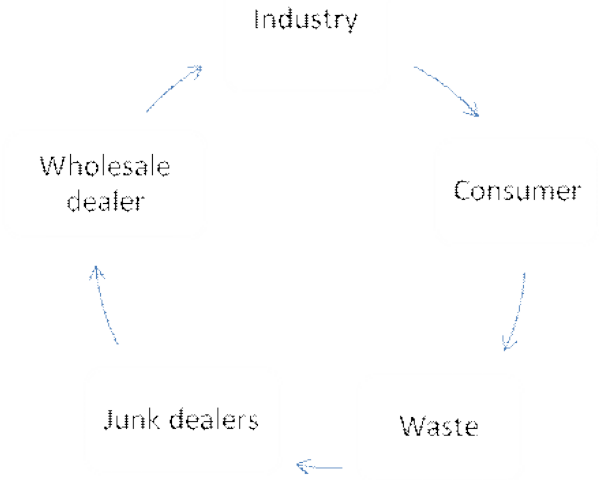
a. The volume of the waste is reduced to more marginal levels.
b. It reduces land requirements.
c. The residue after incitation, if properly carried out, is free from any degradable materials and hence is no longer a source of pollution.

ii. Pyrolysis:

The chemical constituents and chemical energy of some organic waste can be recovered by destructive of solid waste

RECYCLING AND REUSE

Recycling and reuse of the waste helps to reduce the problem of waste disposal.



Significance of the recycling

i. Leads to the less utilization of the raw material
ii. Reduction in rate of environment impacts
iii. Clean and net surrounding
iv. Saving landfill space
v. Saving economic loss
vi. Reduction in amount of energy required for the manufacture new products.

Recycling in the product life cycle

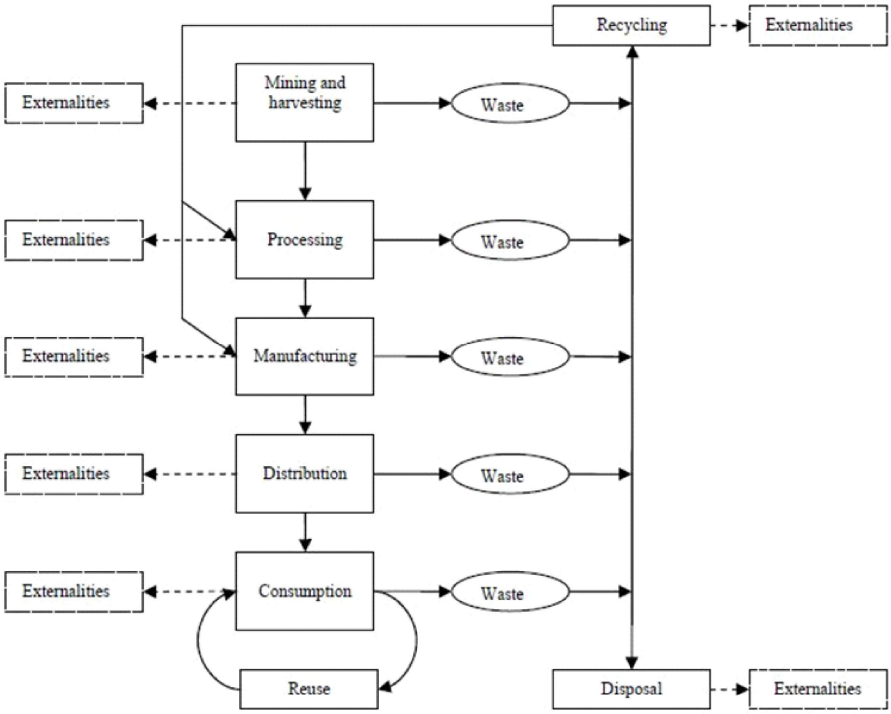


Fig: 2

This diagram is a simplified representation of what can happen in a product's life cycle, from the time natural resources are mined (in the case of nonrenewable resources) or harvested (in the case of renewable resources), through the stages of processing, manufacturing, distribution (including wholesaling and retailing activities) to where it is consumed. Waste can be generated at all points in the life cycle, not just in the post-consumer phase. It can be either disposed or recovered in some way (represented here as recycling).

The diagram also shows that environmental and other externalities can occur at each stage in a product's life cycle. From a waste management perspective, downstream externalities are those that might arise from disposal or recycling (including the waste collection and transport associated with these activities). Upstream externalities occur prior to the point at which waste is generated. For example, the 'externalities' boxes on the left hand side of the diagram indicate the externalities that might occur upstream of, or prior to, final consumption.

CONCLUDING REMARKS

Waste management policy should primarily be focused on reducing social and environmental risks from waste collection and disposal to acceptable levels. The Commission considers that policy makers have become distracted by the pursuit of other, waste hierarchy inspired, objectives - such as minimizing waste and conserving resources - and given insufficient regard to whether their interventions would actually lead to net benefits to the community and the effluent from the plant was fit to fed in the fish ponds for the purpose of production of fish. Again the final effluent from the fish pond consisting of high nutrient, is advantageously applied to joining crop lands for agriculture purpose. The type of "waste management" is also known as "BANDIPUR MODEL OF SEWGE TREATMENT" is given under the name of the village "Bandipur".

FUTURE WORK

1. Management of Recycling
2. Technology development based on environmental management system (EMS)
3. Awareness program at Macro-level.
4. International patent laws are being modified to accommodation EMS.

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