

Solid Waste Management—An Important Issue for Today's Social Life

Rajan Shah¹, Manendra Kumar Yadav² and Arindam Ghosal³

^{1,2}Student, Dronacharya Group of Institutions, Greater Noida (India)

³Dronacharya Group of Institutions, Greater Noida (India)

E-mail: ¹rshah0262@gmail.com, ³arindam.ghosal@gnindia.dronacharya.info

Abstract—In this paper we are going to explain the processes of reuse of solid wastes created by human beings, which is called Solid Waste Management. Solid wastes are the direct consequences of what we do in our modern life. With the advancement in science and technology an exploitation of natural resources are envisaged. Consequently the life standards are also increased with production of more and more solid wastes especially in urban areas.

The refuse materials such as newspaper, cotton pieces, foodstuff, skin, clothes, leather, old dress, fish etc., anything of solids produced by the humans is going to become a waste some time somewhere and somehow. It means waste material is produced as a result of human activity. The quantity of this material is increasing readily due to increase in human population and standard of living. For example, in Bombay 7000 tons of municipal solid wastes are being produced every day. All this is contributed by the kitchen refuse, markets and slaughter house. These wastes have to be disposed off so that environment remains clean and healthy for inhabitation. Solid waste management includes the process of generation, collection, storage, transport, reuse and re-circulation of disposal.

1. INTRODUCTION

Until 1950 the solid waste disposal had not posed any problem. However during the period between 1953-55 the spread of viral disease to hogs attracted the attention of several sanitary engineers and farmers. Since that time onwards feeding garbage to hogs was banned in the USA however in India feeding to cattle is still continued unabatedly. It is probably for the first time that scientific studies on refuse management were started and published in Chicago by the Public Administration Department (APHA, 1980). The EPA of the US also published its fourth report on the resource recovery from solid waste in 1977. After 1970, several people started working on this topic. Those include, Winkler and Wilson, 1973; Alter, 1981; Bruce, 1984; Howard, *et al.*, 1985; Jeevan Rao, 1992 ; Hosetti, *et al.*, 1998 and Priya, 2001.

2. CLASSIFICATION OF SOLID WASTES

These wastes may have reuse values in some other places, but these are of no value to the possessor who wishes to dispose them. The knowledge about sources of solid wastes along with the information of the composition and rate of generation, will

help in the process of design and operation of the functional elements associated with the disposal and management of solid wastes. Therefore it is important to define various types of solid waste that are generated from various sources (Pheleps *et al.*, 1995).

Refuse: This is all putrecible and nonputrecible waste except body wastes. It includes all types of rubbish and garbage.

Rubbish: This refers to that portion of the refuse, which is non-putrecible solid waste such as packaging materials.

Garbage: This refers to that portion of the refuse, which is putrecible component of solid waste. These are produced during cooking and storage of meat, fruits and vegetables.

Bulky wastes: These include household wastes, which cannot be accommodated in the normal storage containers and need a special collection mechanism. These include, household appliances such as refrigerators, washing machine, furniture, vehicle parts, tyres, trees, wood branches etc.

Street wastes: This includes wastes collected from streets, walkways, parks, playgrounds, which include paper, cardboard, plastics, leaves and other vegetable matter in large quantities.

Dead animals: These include dead animals those die naturally or accidentally killed on the road. This category does not include carcasses and animal parts from slaughterhouses, which may be regarded as commercial or industrial components. Many times as in India the large animals if died and are not lifted on right time then they may pose a threat to public health through attracting flies and produce bad odour and create an unhygienic scene.

Hazardous Wastes: Hazardous wastes are those produced in the industries, institutes, hospitals and laboratories. These are dangerous to the living organisms immediately or in the long run to the environment in which they are disposed. The hazard may be due to their physical, chemical, biological and radioactive characteristics like, ignitibility, corrosivity, reactivity and toxicity. In some cases various chemicals and their mixtures act as hazardous wastes. Those may be

pesticides, solvents, acids and bases. Certain hazardous wastes may cause explosions in the incinerators and fires at the landfill sites. Other hazardous waste includes pathological wastes from hospitals and radioactive wastes, which require special handling. A good management practice should ensure that hazardous wastes are stored, collected, transported and disposed separately after suitable treatment.

Sewage Sludge: The sewage treatment plants produce huge amounts of sludge during primary and secondary phase of treatment, these are sticky and rich in pathogens require proper treatment. These are both inorganic and organic. The bulk of dewatered and digested sludge can be used as organic fertilizer or it may be burnt to produce energy.

Table 1: Composition of Municipal solid waste

Elements	Range (% dry weight)
Carbon	23.0-30.0
Hydrogen	2.5-6.0
Oxygen	15.0-39.0
Nitrogen	0.25-1.2
Sulfur	0.02-0.12
Ash	12.0-13.0

3. WASTE GENERATION

It includes all solid or semisolid materials that are no longer having sufficient value to retain by the possessor. Success of solid waste management depends on the appropriate assessment of quantity of waste generated. Tchobanoglous et al. (1977) have showed a simplified flow diagram for the solid wastes. Wastes are generated at the start of the process, beginning with the process of raw materials. Then onwards at each and every step of processing wastes may be released.

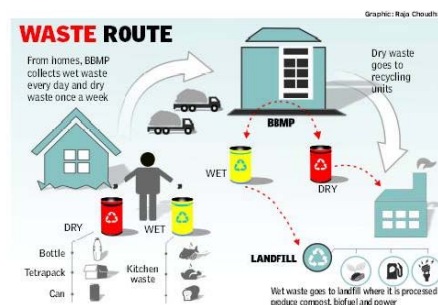
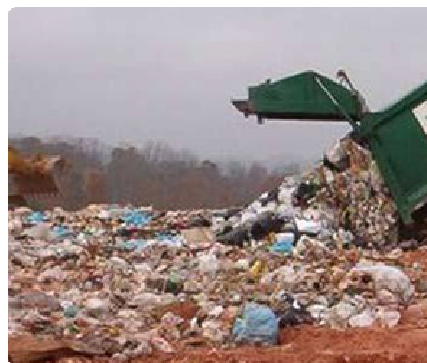


Fig. 1: Solid waste Management

We can reduce the amount of solid wastes by minimising the consumption of raw materials and increasing the rate of recovery and reuse. Although this concept is simple, implementing such changes in the society is difficult unless appropriate management solutions are provided. Forecasting waste quantities are also difficult and are similar to waste composition. Another point to mention is waste density. As the waste moves from the source of generation to the point of ultimate disposal, it is also influenced by the storage methods, salvaging activities, exposure to weather, handling methods and decomposition.

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