Environment

Research Paper



Solid Waste Generation, Composition and Management at General Bus Stand Akhnoor (J&K) India

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ABSTRACT

solid waste generated from various sources needs to be disposed properly in scientific manners to ensure its minimum impacts on the quality of environment. As open dumping of solid waste can pose serous threat to the surface and underground water and the quality of soil. Solid waste generation is not a new problem. It began at the dawn of civilization, when man started living in groups or so called present day societies. Prior to this waste of primitive man was small and get easily absorbed by the nature due to its organic nature. But presently large number of items such as plastic, polythene, hazardous waste is a serious threat to the environment. In the present study the detail of the composition and management of solid waste at general bus stand Akhnoor studied.

Keywords : solid waste, landfill, bus stand, biodegradable

Introduction

The solid waste means anything which is useless or discarded after its use for example yesterday's newspaper or empty bottle which is thrown after its use. In other words we can say that "matter in the wrong place". The term solid waste used internationally to describe non-liquid waste material arising out from domestic trade, commercial, industrial, agricultural and mining activities and from public services. Non liquid is a relative term because sludge of certain kind fall with the scope of solid waste management, which arise primarily from industrial and sewage treatment plants.

Classification

Typical classification of solid waste was suggested by Hosetti and Kumar (1998) as follows.

- Garbage: Putrecible wastes from food, slaughter houses, canning and freezing industries.
- Rubbish: non-putrecible wastes either combustible or non-combustible. These include wood, paper, rubber, leather and garden wastes as combustible wastes whereas the non-combustible wastes include glass, metal, ceramics, stones and soil.
- 3. Ashes: Residues of combustion, solid products after heating and cooking or incineration by the municipal, industrial, hospital and apartments areas.
- Large wastes: Demolition and construction wastes, automobiles, furniture's, refrigerators and other home appliances, trees, fires etc.
- Dead animals: House holds pets, birds, rodents, zoo animals, and anatomical and pathological tissues from hospitals.
- Sewage sludges: These include screening wastes, settled solids and sludges.
- Industrial wastes: Chemicals, paints, sand and explosives.
- 8. Mining wastes: Tailings, slug ropes, Culm piles at mine areas
- 9. Agricultural wastes: Farm animal manure, crop residues and others.

Globally the estimated quantity of wastes generation was 12 billion tonnes in the year 2002 of which 11 billion tonnes were industrial wastes and 1.6 billion tonnes were municipal solid wastes (MSW). A host of researchers (Siddiqui et al., 2006;

Sharholy et al., 2005; CPCB, 2004; Kansal, 2002; Singh and Singh, 1998; Kansal et al., 1998; Bhide and Shekdar, 1998; Dayal, 1994; Khan, 1994; Rao and Shantaram, 1993) have reported that the MSW generation rates in small towns are lower than those of metro cities, and the per capita generation rate of MSW in India ranges from 0.2 to 0.5 kg/day. The type of waste generated from different sources varies from countries to countries. As studies conducted by Chakarbarty (1993) reveals that physical character of solid waste vary from site to site. Solid waste generation is not a new problem. It starts with civilizations as human beings started to dwell in groups in the form of present day societies. Prior to this the waste generated get easily absorbed and dissipated by natural processes because population density was small and land available was large, moreover waste produced was organic in nature. The safe disposal of solid waste is the need of the hours. According to Deshpande (1984) there is need for evolving a clean cut policy for the management of solid waste, particularly in Asian countries. The solid waste can exert harmful impacts on human health, (Sandwar, 1991). According to Rao and Shantaram (1996) urban solid waste in and around Hyderabad had a higher concentration of heavy metals and argued its contamination with food chain.

1. Study area and methodology

1.1 Study area

The present study area is general bus stand of Akhnoor tehsil. Geographically it is located at latitude of 32.9 ° N and longitude of 74.75° E along the right bank of river Chenab. It is 32 Kilometer away from the winter capital of State Jammu & Kashmir. The total numbers of shops located at the Bus stand are founded to be 54 in addition to this several vendors, hawkers, and unregistered sellers of various items are running their shops, in the form of dhabas, tea stalls etc.

1.2 Methodology

The present study is based on research work during the dissertation course on topic entitled as "the composition, Generation and management of solid waste at general bus at Akhnoor". The study is conducted for period of five months by taking reading after every month and data obtained thus processed to draw conclusion. The waste material segregated into bio degradable and non bio degradable which can be further divided into various groups, and measured in kg by using weigh-balance machine so that qualitative and quantitative aspect of solid waste can be calculated. The different component of waste generated from different sources such as shops, hotels, restaurants etc. is collected by safai karamchari of municipal committee of Akhnoor town formerly it was Notified Area Committee manually either in baskets, wheel harrow etc. and dumped at nearby temporary dumping site, which was an open area nearby the bus stand from where it carried away for dispose off weekly on trucks. Before every reading the solid waste from this temporary dumping site is segregated into bio degradable and non bio degradable groups, which are further divided into different sub groups on the basis of their nature such as plastic, polythene, rubber leather, glasses etc. the quantity of the waste material is measured by using weight measuring machine. The reading taken in morning so that estimation of waste generated during the previous day can be quantified. The composition of solid waste is determined

2. Results and discussion:

The total waste generated per day from the study area is found to be 160.83 Kg. The detail of the study is tabulated in Table 3.1, which clearly shows that the total quantity of bio degradable waste (53.97kg) generated per day from the

study area is greater than those of non biodegradable (38.60 kg). Similar observations were made by Pati et al (1985) w.r.t municipal solid waste of Pune rich in high organic matter or bio degradable in nature. The detail of percentage of various items in the solid waste is shown in the Fig. 3.1. The large proportion of waste is shared by fruit and vegetable waste (18%) and followed by bagasse(14%), scrap(11%), rubber(9%), wood (9%), paper(8%) etc., the waste in terms of fruit and vegetables includes peeling of fruits generated from juice shops, the discarded fruit and vegetable thrown by shopkeepers and vendors, peeling of fruits thrown by public at large. As the study conducted during the summer months the waste of sugarcane after extracting its juice is another constituent of waste generated. Tin cans, and other types of metallic waste add weightage to the scrap material. Soles of Footwear, tyres, rubber tubes constitute the rubber waste material. the tea stall, hotels restaurants are the important centre of paper waste in terns of cups and plates, tissue papers, discarded newspapers, card board etc.. Other components of waste material include plastics, polythene, thermocol, glass material, leather is also found in minor quantity. The detail of the percentage of various components of solid waste is shown in Table 3.2.

Table 5.1, showing the quantative and quantitative aspects of waste generated	Table 3	3.1,	showing	the	qualitative and	quantitative as	spects c	of waste ge	enerated
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S. No	Turnes of wests	Readings of waste generated (in Kg)				TOTAL
	Types of waste	first	second	third	fourth	TUTAL
1.	Bio degradable wastea)Fruit and Veg.b)Woodc)Paperd)Fibree)Bagassef)dead Animals	17.84 4.70 3.70 1.20 0.70 5.12 2.42	10.69 2.80 1.33 1.90 0.30 3.16 1.20	11.62 3.71 1.55 2.10 0.50 2.16 1.60	12.22 5.12 1.70 1.70 0.60 2.80 0.30	52.37 16.33 8.28 6.90 2.10 13.24 5.52
2.	Non bio degradable waste a) Polythene b) Plastic c) Scrap d) Glass e) Rubber f) leather g) Sponge & Thermocol	14.27 1.30 2.97 3.17 2.15 3.22 1.16 0.30	8.44 0.50 1.30 2.86 1.30 1.56 0.80 0.12	8.21 0.90 0.30 2.20 0.80 2.30 1.50 0.21	7.68 0.70 1.70 1.50 0.90 1.40 1.30 0.18	38.60 3.40 6.27 9.73 5.15 8.48 4.76 0.81
	TOTAL	105.89	19.13	19.83	15.98	160.83

Table 3.2: Showing the const	tuents of waste material, if	ts percentage and possible sources
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S. No	Waste material	Percentage	Possible source
1 23 45 6 7 8 9 10 11 12 13	Fruit and veg. Wood Paper Fibre Bagasse Dead animals polythene Plastic Scrap Glass Rubber Leather Sponge & Thermocol	18 9 8 2 14 6 4 7 11 6 9 5 1	vegetable and fruit shops, vendors, juice shops dicarded boxes, and packing materials, sticks old newspaper, card board, wrappers, tissue papers old and discarded bags, cloths, seat covers, mats, etc sugarcane juice shops rats, dogs, cats, and other sray cattles etc. bags, packing material, wrappers discarde cans, bottles, toys, shoes etc. tins, cans, nails, discarded spare parts of vehicle, iron and steel sheets, rod etc. broken bulbs, tube lights, windows panes of vehicles tyres, tubes, shoes, chapels, etc. shoes, seats covers packing materials.

Every type of waste has its own implications and can cause environmental problems. The open dumping of solid waste at the temporary dumping site which is open and along the sewage drain is highly problematic. The conditions turn pathetic during monsoon season during which waste tend to enter into sewerage as run off. Due to lack of dustbins people dump waste material in the open. The burning of waste in the open is another common practice observed during the study. Beside this dumping site serve as feeding and breeding grounds for large number of pathogens, decay of organic waste such as fruit and vegetables, dead animals, was found to be a source of public nuisance. Due to lack of proper treatment techniques waste material carried by the authorities in the trucks for final disposal which is usually open seasonal rivers away from the town or burned at the site. Present study helps the concerned authorities in formulation of their plans and strategies to control the problems of solid waste generation locally and to implement the recommendations, if possible.



Fig. 3.1 Pie chart showing the percentage of waste items generated from the study area 3. Recommendations for the solid waste management: Solid waste management includes the process of generation, collection, storage, transport and disposal or reuse and recirculation or incineration or any relevant method of disposal. Jain (1884) stressed the need for recycling of municipals solid waste in developing countries and recommended the use of incineration methods for proper disposal of solid waste in urban centres. Keeping in views the problems of open dumping solid waste the recommendations for the solid waste management is suggested as below:

 Bio degradable waste can be treated by composting techniques by which waste material can be converted in to compost which can be used as fertilizers in agricultural fields

- 2. For the treatment of non biodegradable methods such as sanitary landfill can be used.
- Authorities needs to install dustbins provided with lids at major prominent location at the bus stand.
- 4. Reduce and recycling techniques can be further helpful fro reducing the load of waste generation and at the same time conservation of natural resources.
- Public awareness programmes needs to be organized at regular interval to imparts knowledge about the ill effects of open dumping methods of solid waste and methods of solid waste management
- People needs to be aware about the open dumping menace of solid waste so they need to uses ecofriendly bags while go for shopping rather than the use of polythene.

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