



Generation, Composition and Management of Solid Waste in Ward no. 39, Shiv Nagar Extn., Jammu (J&K)

KEYWORDS

Solid waste, biodegradable waste, non-biodegradable waste and inert material

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ABSTRACT The study was carried over a period of two months viz., May and June (2009) through field study in which waste was collected over a period of 24 hours daily. The values of different constituents of the waste collected were then taken to estimate the amount of total waste generated during the study period. The collected waste was then segregated and weighed with the help of digital balance. The findings revealed that there was a maximum share of biodegradable waste (72.94%) which consists of vegetable (28.13%), food (11.16%), fruit (20.96%), paper/cardboard (11.62%) and textile (1.09%), followed by non-biodegradable waste (24.25%) which consists of plastic (15.25%), metal (3.54%) and glass (5.44%) and inert material (2.81%) which consists of hair (0.73%) and dust (2.09%). It is concluded that for management of solid waste we have to follow 5 R's (reduce, reuse, refuse, recycle and reform).

INTRODUCTION

Land is our most valuable asset; our old literature abounds in hymns and praised "mother earth", the land. However, with the advancement of human civilization, urbanization, industrialization and population increases, the valuable asset is being constantly contaminated and deteriorated. Pollution has assumed monstrous proportion and land has become universal sink for what the civilized man thinks as waste or refuse.

The environmental problems created by solid waste are becoming more acute day by day. There is an urgent need to protect the environment from further deterioration by efficient management and disposal of solid waste. The environment protection is one of the issues to which the whole world including the developed countries like USA has focused its attention. Most of the countries have adapted this issue as one of the socio-economic policy matter.

The residential solid waste remains one of the major areas of concern because of its immediate effects on the people living near the operating dumping sites or nallah's. In Jammu city at present, 450 tonnes of municipal solid waste is generated per day which contains 54% biodegradable waste, 14% recyclable and remaining 32% inert material (Daily excelsior, 2006).

The term solid waste now used internationally to describe non-liquid waste materials arising from domestic, trade, commercial, industrial, agricultural and mining activities and from public services. "Non-liquid" is a relative term because sludge of certain kinds fall within the scope of solid waste management. These arise primarily from sewage and industrial effluent treatment plants.

Though a lot of work has been done on solid waste generation, and its composition in various parts of India by various workers e.g. Dutta et al. (1999), Aggarwal et al. (2000), Garg and Prasad (2003), Bhide et al. (2004), Rampal and Sharma (2006), Jayalakshmi (2007) but not much attention seems to have been paid to this rapidly growing menace of solid wastes from this subtropical part (Jammu and Kashmir) of the country expect some preliminary efforts made by Rampal and Kour (2002), Sharma (2008), Dubey (2006).

STUDY AREA



Jammu city, the winter capital of the state of Jammu and Kashmir is located on both the banks of the river Tawi and lies between 32° 38' and 32° 48' North latitude and 74° 47' and 74° 50' East longitude. Jammu is the second largest city of the state. In the last few decades, there has been stupendous growth in the urban population of the city due to migration of people from small towns. Consequently there is a generation of huge quantity of solid waste leading to its inadequate disposal.

Shiv Nagar Extn. (Ward no. 39), the area covered under the investigation is situated at the distance of about 7km. from University of Jammu, Jammu and comes under the municipal limits of Jammu. There are 80 houses having 450 individuals.

RESEARCH METHODOLOGY

In the study area, twenty houses were randomly selected for the investigation on solid waste generation, composition and management. Samples of solid waste were obtained over a period of two months (May, 2009 to June, 2009) from selected 20 houses. Solid waste generated per house during 24 hours was collected in a paper bag and segregated into three broad categories viz.,

Biodegradable waste: It includes vegetables, food, fruit, textile, paper and cardboard.

Non-biodegradable waste: It includes plastic, metal and glass

Inert material: It includes dust and hair.

All the categories of waste were weighed using Digital Balance. At the time of collection, number of family members was also recorded for analysis. The results of waste generation are expressed as mean waste generated/house/day, percentage waste generated /house/day, Mean waste generated /house/month and mean waste generated /house/year in the study area.

RESULTS AND CONCLUSION

A random survey of qualitative and quantitative analysis of twenty houses in Ward No.39 (Shiv Nagar Extn.) of Jammu area was conducted for domestic solid waste generation and the observation reveals the maximum percentage of biodegradable waste (72.94%) followed by non-biodegradable waste (24.25%), and inert material (2.81%) in the area (Fig. No. 1). The information thus gathered throughout the study was then compared with some of the studies carried out previously e.g. Bhawna (2001), at Rehari area, Jammu found the highest percentage of biodegradable waste (58.6%), non-biodegradable waste (39.9%), and inert material (1.5%). Verma (2005) carried out study in Rajpura, Jammu and reported the maximum percentage of biodegradable waste (81.65%) followed by non-biodegradable waste (13.99%), and inert material was found out to be 4.36%. Anu (2008) while studying solid waste generation, composition and its management in Akhnoor, Jammu recorded the highest percentage of biodegradable waste (83.79%), non-biodegradable waste (16.50%), and inert material (0.30%). The findings, therefore, revealed that there has been a marked fluctuation in the solid waste generation rate over a period of time.

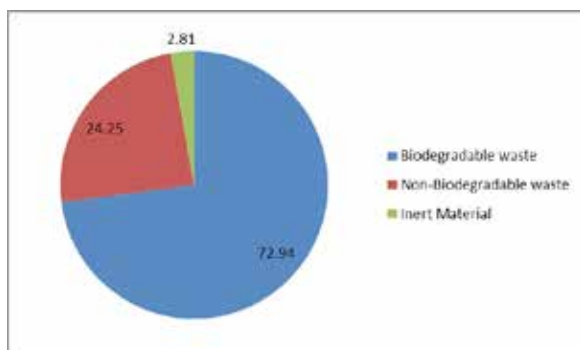


Fig. No. 1. Pie-diagram showing percentage of waste generation.

Solid waste disposal in Shiv Nagar is not done in a systematic way. People throw solid waste outside their houses and drains or some people put the same in the near by nullah. Sweepers sweep the waste, collect and separate it into reusable and discarded materials. Most of the waste is dumped around the houses and burn to fire. The smoke thus generated, drifted into nearby houses and become a severe air pollution problem. Decomposable materials generated from houses mostly from kitchen is also thrown around the drains which becomes a source of bad smell.

Based on the findings, the following measures can be adopted for the management of the solid waste in the study area.

1. Use of small community containers would reduce the present practice of throwing refuse on the ground.
2. Use of low cost locally made pedal tricycles would reduce the requirements of vehicle and fuel.
3. Design of primary collector and containers should be such, so that, double handling of refuse can be avoided. This would be helpful in reducing health risk, wastage of labour and waiting time of vehicle.
4. Small and manually operated sanitary land filling would be economically feasible and ecologically viable.
5. Composting of refuse would be the major option for disposal due to high organic content of waste.
6. Open dumping should be avoided as this method of disposal on one hand degrades the soil quality and on the other hand degrades the quality of the surface and ground water.
7. Burning should also not be preferred because burning method on one hand adds to the air pollution and on the other hand kills the micro flora and fauna of the soil thereby making the air unhealthy to breathe and making the land unfit for growing the crops.

Thus we need to move to safer and cleaner technologies for solid waste management. We have to learn to apply the environmental principles in our modern lives to achieve a sustainable lifestyle and save ourselves and our planet.

The ideal solution for solid waste is by the self-realization of each and every person that we have only one earth and should not convert it into a dumping ground, considered it as a house not as hotel. Change in attitude is the biggest change which we have to bring into the society. It is the man who belongs to the earth and not the earth belongs to us. We should remember that we have only one earth.

RECOMMENDATIONS

Recommendations at authority level

1. Techniques like sanitary landfills, incineration, composting etc. should be adopted on regular basis for proper management of solid waste.
2. Authority needs to place dustbins with lid at different locations as open dumping can cause health hazards to the human beings as well as animals which feed on the waste.
3. For transportation, mechanized and covered vehicles should be used. The workers should be provided with proper dresses to handle the solid waste must be educated about health hazards due to solid waste handling.
4. Authority should provide land for proper disposal of solid waste.
5. Awareness among masses should be carried regularly and repeatedly to impart their knowledge about clean and healthy environment and menace of wrong disposal of solid waste.

Recommendations at public level

1. People should reduce the waste generated at the source only by eliminating and avoiding the generation of any discarded material, before it is produced, thereby, reducing its quantity and toxicity.
2. Waste should be segregated into non-biodegradable and biodegradable types. Biodegradable wastes can be converted to manure by vermicomposting and recyclable materials must be given to rag pickers or kabadiwalla's for recycling.
3. Use of hand bags made of clothes instead of polythene bags for shopping.
4. A good house keeping can play an important role in

reducing the problem arising out of unmanaged solid waste to some extent.

5. Everyone must follow the environment philosophy of four R's (Reduce, Reuse, Refuse and Recycle).

Awareness among the masses should be carried out through mass media and print media, audio-visual aids and door to door campaign.

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