



Generation, Composition and management of solid waste in rajouri town, (J&K)

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ABSTRACT

This study is an effort to observe the amount of total waste generated from different zones of rajouritown,Rajouri. The relevant data has been collected randomly from the houses of four different zones of rajouri town. The collected waste was then segregated and weighted with the help of spring balance. The findings exposed that there was a maximum share of biodegradable waste which consist of vegetable (42.01%), food(10.38%), fruit (16.63%), paper (10.38%), and textile (1.35%) followed by non- biodegradable waste which consists of plastic (9.68%), metal (4.30%) and glass (4.11%) and the inert material (0.69%). The study suggested that for proper management of solid waste, enormous efforts are needed atKeywords: Solid waste, biodegradable waste, non-biodegradable waste and inert material individual and government levels to reduce its adverse impacts.

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1. Introduction

Solid waste is un wanted or useless solid materials generated through anthropogenic activities from combined residential, industrial and commercial activities in a given region (Parvathamma, 2014). Ecologically, solid waste can be categorized into as biodegradable, non-biodegradable and inert waste (Kumar and Singh, 2013). Further, according to its origin it is classified as



domestic, industrial, commercial, construction or institutional; on content basis as organic material, glass, metal, plastic and according to hazard potential toxic, non-toxin, flammable, radioactive, infectious etc., (Festus and Omoboye, 2015). Management of solid waste mitigates adverse impacts on the environment and human health and supports economic and social development through improved quality of life (Dutta et al., 1999). However waste generation increases persistently in proportion with population and increasing land requirements (Indris et al., 2004). A number of processes are involved in efficiently managing solid waste i.e., monitoring, collection, transport, processing, recycling and disposal (Kumar and Pandit, 2013). Thus, solid waste management includes all administrative, financial, regulatory, planning, and engineering functions (HaiandAli, 2005). In fact, waste management responsibilities primarily lie with cities and municipalities (Ramachandra and Varghese, 2003). Many of the successful cases in waste management involve a wide range of stakeholders in their implementation (Yousuf and andRehman (2007).

2. Material and methods

The present study is conducted in different zones of Rajouri town. There were approximately 1000 houses in the study area. Randomly, 70 houses were selected from 4 different zones of Rajouri town. For the present study of solid waste generation, composition and management of SOLID waste in zones of Rajouri town (J&K) Samples of solid waste were collected from about 18 houses from zone 1-3 and 16 houses in zone 4 for the purpose of study. The data were collected with the help of a field experiment over a period of 2 months, where solid waste generated per house during 24 hours was collected, segregated into following three broad categories: Biodegradable waste (vegetables, fruits, food, egg shells, paper, cardboard, textile etc.); Non-Biodegradable waste (Plastic, Polythene, glass, metal, rubber etc.) and Inert material (dust and hair). Each item was weighed using digital Spring balance. The results of waste generation are expressed as mean solid waste generated/house/day, percentage solid waste generated /house/day, mean solid waste generated /house/month and mean solid waste generated /house/year in the present study.



3. Result and conclusion

The results of the qualitative composition and quantitative analysis of domestic solid waste generated in zones of Rajouri town, Rajouri has been tabulated in Tables 1-2. Critical observation of Table 2 reveals generation of the maximum percentage of biodegradable waste (81.18%), followed by non-biodegradable waste (18.09%) and inert material (0.69%) in Rajouri town. Quantitatively, among various constituents of biodegradable waste generated per house/day, the maximum percentage is shared by vegetable waste (42.01%) followed by fruit waste (16.63%), paper (10.82%), food waste (10.38%), and textile waste (1.35%).

Among various constituents of non-biodegradable waste, plastic, metal and glass shared the percentage of 9.68%, 4.30% and 4.11%, respectively. Inert material shared the percentage of 0.69%. An observation of Table 1 has shown lane wise generation of maximum percentage of waste in Lane 2 (biodegradable -81.5%, non-biodegradable -17.7% and inert 0.80%) followed by lane 3 (biodegradable- 80.6%, non-biodegradable- 18.8% and inert- 0.60%), lane 1 (biodegradable -80.5%, non-biodegradable 19% and inert 0.50%) and lane 4 (biodegradable - 80%, non-biodegradable- 19% and inert- 1%), respectively. Further, Table 2 depicts per house/month generation of 12077.64g of solid waste from Rajouri town

Among the various categories of solid waste generated/house/month, there is maximum generation of biodegradable waste (9807.54g) followed by non-biodegradable (2186.1g) and inert material (84g) respectively. Among biodegradable waste, there is per house/month dominance of vegetable waste (5073.51g) and sub-dominance of fruit waste (2008.8g) followed by paper waste (1306.8g), food waste (1254.54g) and textile waste (163.89g). Plastic, metal, and glass have recorded per house/month generation of 1169.7g, 519.9g and 496.5g, respectively. Inert waste showed per house/month generation of 84g. The observation of Table 2 reveals that the total waste generated /house/year is 149931.68g. Out of this, 117690.48g is biodegradable; 26233.2g is non-biodegradable and 1008g inert material. Among various constituents of biodegradable waste (per house/year) there is dominance of vegetable waste (60882.12g), followed by fruit waste, (24105.6g), paper (15681g), food waste (15054.48g) and textile waste



(1966.68g). Plastic waste (14036.4g) showed dominance among various constituents of non-biodegradable waste followed by metal waste (6238.8g) and glass waste (5958g). Inert material recorded total generation of 1008g/house/year. In addition, the average generation of solid waste /person/house/day in Street of Rajouri town, Rajouri is found to be 49g/person/house/day.

Table I: Average solid waste generation (g/house/day) in some houses located in zones of Rajouri town

Solid waste		Zone1	Zone 2	Zone 3	Zone 4
Biodegradable	Veg.	144.2	187.9	202	127.6
	Fruit	75.4	79.8	68.2	41.36
	Textile	4.56	9.7	3.88	36.7
	Paper	59.6	57	34.9	3.1
	Total	321.96	388.9	375.88	218
	Percentage	80.5%	81.5%	80.6%	80%

Solid waste		Zone1	Zone2	Zone3	Zone4
Non Biodegradable	Plastic	40.7	53.7	43.7	23.6
	Metal	23.1 1	15.2	15	15.6
	Glass	11.6	12.8	30	11
	Total	75.4	81.6	88.7	49.6
	Percentage	19%	17.7%	18.8%	19%
Inert	INERT	2.0	3.61	3.18	2.7



	(dust/Hair/Wax				
	Percentage	0.50%	0.80%	0.60%	1%
	Total	399.32	474.11	467.76	270

Table 2: Average solid waste generation in Solid waste Average waste generated per house in(gm's)

Solid waste		Zone 1	Zone 2	Zone3	Zone 4
Non Biodegradable	Plastic	40.7	53.7	43.7	23.6
	Metal	23.1 1	15.2	15	15.6
	Glass	11.6	12.8	30	11
	Total	75.4	81.6	88.7	49.6
	Percentage	19%	17.7%	18.8%	19%
Inert	INERT (dust/Hair/Wax	2.0	3.61	3.18	2.7
	Percentage	0.50%	0.80%	0.60%	1%
	Total	399.32	474.11	467.76	270

Monthly generation of waste per house in (gm's)

Yearly generation of waste per house in (gm's)

Biodegradable



Veg. 169.117 42.009 5073.51 60882.12 Food 41.81 10.38 1254.54 15054.48 Fruit 66.96 16.63
2008.8 24105.6 Textile 5.46 1.35 163.89 1966.68 Paper 43.56 10.82 1306.8 15681.6 Total
326.90 81.18 9807.54 117690.48

Non- Biodegradable

Plastic 38.99 9.68 1169.7 14036.4 Metal 17.33 4.30 519.9 6238.8 Glass 16.55 4.11 496.5 5958
Total 72.87 18.09 2186.1 26233.2

Inert

INERT (dust/Hair/ Wax

2.80 0.69 84 1008

Total 402.57 12077.64 144931.68

4. Conclusions and recommendations

The respondents collected solid waste in plastic bags or dustbins and dispersed it in open or vacant plots. Sweepers were engaged for sweeping the lanes and streets. The tricycles were used to transport solid waste from various places to the site of disposal. At the storage and disposal site, various recyclable materials such as rubber, plastic, metal, paper etc. are collected by rag pickers and segregated and are finally sold in the market. The methods of solid waste management in the present study area were found to be unsatisfactory in almost every respect. It is recommended that at government Level solid waste management strategies cannot translate into reality unless the government takes the required initiatives and makes the necessary inputs available. Transport of waste in covered vehicles; increase in the number of dustbins to meet the demands of increased solid waste in the study area and providing adequate community storage facilities. Safaikaramcharis should be properly employed for the cleaning of area.

Various disposal methods like composting, vermi-composting, energy recovery etc. should be brought into practice for a proper solution to the problem of waste disposal. Open dumping and open burning should be avoided to reduce air pollution and to protect the population from its hazardous effects. Proper waste collection system should be brought into practice so as to maintain hygienic conditions of the area. Strict measures (like penalty and punishment) should



be taken against those who dump waste outside the bins or throw waste in the open or into drains. It is not only the responsibility of government, but the community as a whole has to come forward and take part in the improvement of solid waste management strategies and these are: source segregation of solid waste into bio degradable and non biodegradable waste must be done at the consumer level so that they could be disposed off properly, Segregation into recyclable, reusable waste before dumping into dustbins is also a useless step towards waste minimization. The people should avoid, rather they should discard the use of polythene bags and should carry cloth bags and should carry cloth bags or jute bags while going out for shopping. Moreover, awareness among masses should be imparted on large scale so as to make them familiar or aware about the ever increasing threats posed by the open dumping of the solid waste to the health and personal hygiene of the people. At individual level, each and every person is responsible for this large scale generation of solid waste, so it is the responsibility of every individual to improve solid waste management system by the ways i.e., while going to the market, carry your own cloth bag, take your own washable, refillable beverage container for meetings, conferences etc.

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