



Municipal Solid Waste Management in Ajmer City, Rajasthan: An Overview

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ABSTRACT

Human activity generates considerable amount of solid waste. The nature of waste varies depending upon the kind of activity. Municipal and biomedical wastes are the major solid wastes contributed from the urban centre, Ajmer. Ajmer has Dargah of Khwaja Mounuddin Chishty, a pilgrimage centre for muslims of the world, and Pushkar pilgrimage for the Hindus of the world. The study was carried out to understand the present status of solid waste management of the city. The total quantity of solid waste generated in the city is around 950 TPD (tons per day) with a per capita generation of 0.35 kg. Sporadic incineration is very common and no proper disposal facility has been provided for the municipal solid waste.

INTRODUCTION

Anthropogenic activities in society generate large quantities of wastes, both garbage and sewage, which create a problem of pollution in absence of their proper disposal. Due to improper disposal microbial and other diseases spread.

Shekdar (1999) has reviewed municipal solid waste management (SWM) in Indian context and noted that the Indian municipalities, responsible for variety of public services, offer low priority to SWM system. If SWM is disrupted, it has a potential threat to public health. The average per capita solid waste generation rate of 0.35 kg per person per day has been reported for cities and towns having a population of 2-5 millions (Shekdar 1999). Kripalani et al. (2005) have studied the solid waste management at Jaipur.

The Ajmer city has some small scale industries, many educational institutions and commercial establishments. Ajmer Municipal Corporation is responsible for community solid waste management system of the city. The present paper deals with the characterisation of solid waste and its management system in the city.

MATERIALS AND METHODS

The solid wastes from different areas were collected, mixed and 1 kg sample was prepared by using quartering method. The waste was then characterized and percentage of each constituent was calculated. Secondary data regarding the solid waste generation collection system and disposal methods were collected from Ajmer Municipal Corporation (AMC).

RESULTS AND DISCUSSION

Ajmer Municipal Corporation is responsible for the management of solid waste generated in the city. The flow sheet of the solid waste management system is given in Fig. 1. There are 52 Wards in the city.

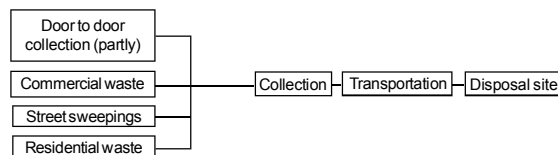


Fig. 1: Flow diagram for solid waste management in Ajmer.

According to AMC, 950 tons per day (TPD) waste is generated in the city. Major sources of solid waste generation are given in Table 1. Waste generation rate works out to be 0.35 kg per capita per day.

The various waste generating places in Ajmer city are mainly vegetable markets, food grain markets, dairy and cattle sheds, hotels and nursing homes, and butcher houses besides the individual homes.

Collection system: The solid waste is collected from different sources/establishments by various methods. The domestic and trade waste is being collected through street sweepings. AMC has placed 150 dust bins of 30-L capacity and 100 containers of 1 m³ capacity in the city for collection of solid waste. The city has government and private hospitals, nursing homes and clinics. AMC has setup a waste disposal system based on common treatment facility for management of the biomedical waste (BMW)

Transportation: Transportation of solid waste is carried out partially by AMC and partially by private contractors. AMC is responsible for transportation of about 30-35% of solid waste generated, while the private contractors are responsible for the rest 65-70% waste. The solid waste is collected temporarily in dust bins and then transported to disposal sites. Types of vehicles used for transportation of solid waste are as follows:

Tractor tippers	20
Tractor trailers	2
Refuse collectors	5
Dumper places	5
Front end Loaders	10
Excavator loaders	2

Lifting of garbage is done manually as well as by loaders. The waste collected from the roads and other places is directly transported to the final dumping site. The refuse vehicles have to travel through the city to carry waste up to the landfill sites. The tractors and dumpers carrying the waste are not covered during the journey and waste tend to spill on roads. Most often the workers are not provided with hand gloves and shoes so they are directly exposed to the wastes. Protective measures are necessary to avoid different skin and respiratory diseases. The unloading of waste is done through mechanical system so there is no direct contact of workers with waste.

Disposal of waste: Disposal sites for waste are out of the city at Ghughra on Jaipur road, Parbatpura on Nasirabad Road and near Vishram Sthali on Pushkar Road. Sewage farm site is being used as dumping ground. The site is not provided with any fencing facility.

Characteristics of solid wastes: The quantity and characteristics of solid wastes vary from place to place. Factors that influence the quantity and composition are the average income level of people, the nature of sources, the population, social behaviour, climate, industrial production and the market waste material. The waste generation and the economic level of the society have been related by

Table 1: Major sources of solid waste generation.

S.No.	Source of waste generation	Quantity, tons per day
1.	Residential areas	500-600
2.	Slum areas	100-150
3.	Vegetable markets	100-150
4.	Medical establishments	10-15
5.	Hotels and restaurants	10-15
6.	Slaughter houses	10-15
7.	Industrial waste	100-150
8.	Construction and demolition waste	80-100

Table 2: Composition of municipal waste of Ajmer city.

S.No.	Component	Approx value (%)
1.	Vegetable, fruits and animal matter	20
2.	Dry grass and leaves	5
3.	Polythene bags	10
4.	Paper and paper products	10
5.	Plastic material	5
6.	Foam, hair, leather	2
7.	Cotton, jute	5
8.	Metals	2
9.	Rubber	2
10.	Concrete, earth, sand stones and dust	25
11.	Ash and coal	5
12.	Wood	0.25
13.	Glass and ceramics	2

Table 3: Estimated MSW generation and area required for disposal in future.

Year	Expected population	Expected MSW (kg/capita/day)	MSW tones/day	Area required in (ha)
2001	2181670	0.35	950	10
2011	3100000	0.45	1056	13
2021	4100000	0.55	2000	20

studying the quantity of domestic solid waste generated from the three socioeconomic groups, viz. low income group (LIG), middle income group (MIG) and high income group (HIG). A positive correlation between of high income and waste generation has been noted. The HIG people throw away more plastic, metallic and glass waste and also hazardous waste. Plastics, metals, glass and plastic bags account for 10% in Ajmer in the solid waste.

The composition of solid waste in Ajmer City has 30% organic matter, 30% earthen material, 30% polythene bags and 10% paper and paper products. This shows that municipal solid waste of Ajmer city has biodegradable material. The percentage of nonbiodegradable wastes like metals and plastics is not very high. The composition of municipal solid waste of Ajmer is given in Table 2.

Municipal solid waste (MSW), projected scenario: The 2001 census population of Ajmer is 21 lakh 81 thousand 670 and it is expected to rise to about 42 lakh by year 2021. At present 950 MT solid waste is generated with per capita waste generations rate 0.35 kg/day.

An attempt was made to project the quantity of solid waste generated in the city up to year 2021 and land required for disposal by landfills based on the assumptions that there is an increase in MSW generation rate of 1.7% per annum with an average depth of filling of 3 m in land fill and 1 MT of compact waste occupying 1 m³ volume. The results are presented in Table 3.

CONCLUSION

The solid waste management system of Ajmer city is not proper. The solid waste should be disposed off scientifically through sanitary landfills. Separation of recyclable waste material would lead to reduction in quantity of solid waste. Timely and proper collection, transportation and development of proper operation like sanitary land fill sites are required. Considering the projected scenario for 2021, better solutions of waste disposal and high land requirement for landfills are needed. Municipal Solid Waste Management Handling Rules, 2000 should be strictly implemented. Separation of different components of solid waste at the source (door-step) is important. Recyclable waste should also be separated. Municipal waste should to be recognised as a source for energy production.

REFERENCES

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