

Solid Waste Management a Case Study of Ajmer

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Abstract

Human population is increasing day by day. So human generated waste is also increasing day by day. The solid waste of Ajmer consist of house hold (residential) waste,garbage, biomedical waste, Polythene waste ,market waste , rural & urban slum . Ajmer is famous for Khwaja Mouinuddin Chisty Dargah and International Pushkar fair and Brahma Temple. In the present paper solid waste status of city was studied. 260 TPD solid waste is generated from 60 wards in Ajmer city. Ajmer has population of 614,000. Area 8481 sq km. Makhapura, Narirabad road, 9-10 km away from Ajmer city, in 319 acres, dumping is done from 1998.before that dumping ground was near Janana hospital 360542 cubic metre solid waste was there near Makhapura dumping site. Waste was dumped in unsystematic way big garbage piles were there.disposed without segregation, no treatment.

Now disposal will be done in scientific manner. According to CPCB solid management rules, 27.24 acre land will be reclaimed by biomining. Now occasional incineration is seen in some areas. No proper disposal facility has been provided for the municipal solid waste. 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.

Keywords: Municipal solid waste, Biomedical waste, SW (Solid waste) management, Ajmer city, Landfill.

Introduction

Human population is increasing day by day. So human generated waste is also increasing day by day. The solid waste of Ajmer consist of house hold (residential) waste,garbage, biomedical waste, Polythene waste ,market waste , rural & urban slum . Ajmer is famous for Khwaja Mouinuddin Chisty Dargah and International Pushkar fair and Brahma Temple. In the present paper solid waste status of city was studied.

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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.

Improper waste disposal creates many problems one of them is pandemic like today's CORONA virus and other zoonotic & microbial diseases. LIG (Low Income Group) produce less waste in comparison to HIG (High Income Group) & MIG (Middle Income Group). LIG believes in more reuse & recycle of products. Kripalani et al. (2005) have surveyed the solid waste management at Jaipur. According to Shekdar (1999) Reviewed that Municipalities of India have low preeminence SWM (Solid waste management). SWM if disturbed is commination to human health. .35 kg / person /day generated in cities having population 5 million.

India is 3rd largest producer of waste 109,589 tons waste per day. (2). 1994 plague in surat was due to solid waste which blocked drains. 2005 flood in Mumbai was due to blocked drains by poly bags. After Almira Patel writ petition 2000 (8), municipal solid waste management and handling rules, give framework for MSW management. Ajmer has Educational institutes, Malls, and small industries ,but do not have proper waste management.

Map of Ajmer
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 municipality does not manages properly Solid waste management. There are 60 wards in Ajmer. According to AMC 250 TPD (Tons per day) waste is generated in Ajmer. .25-.35 kg waste per capita per day is generated. Waste generating places are malls, Educational institutes, houses, small industries, markets, hospitals, butcher houses, food markets & dairies, hotels etc. 3 R s should be there, Reduce, Reuse, Recycling should be there. But recycling is below 5%. Reasons are there behind the lack of participation in waste recycling in Rajasthan ,Haron et al , Level of environment knowledge among house workers in Rajasthan, There is very poor public contribution in env. Friendly beh (recycling & composting) Proper strict laws & communication can increase sorting waste & decrease volume of waste going to landfills. The waste collection system is not proper. Waste is thrown out of houses and incinerated, Street sweeping is also not proper.

Sorting at source should be there. Composting, recycling, recovery should be there.

According to UN population Fund 2014 Urban population is growing very rapidly. Larger than Half population living in cities. It will reach 5 billion after 2025.Barak Obama in 2 october 2014 visited India & announced aid to 3 cities of India including Ajmer. Ajmer will start working sewerage lines (300 Cr Rs). More than

100 dustbins & more than 100 containers for collection of solid waste are there in Ajmer.

AMC is not properly responsible for transport of waste. The work is also done by private contractors. Solid Waste is transported to disposal dumping site. The transport vehicles used to transport Solid waste are not covered properly. The waste also spills on road which is dangerous for human beings health. Workers not provided with safety instruments like gloves, shoes, and safety uniforms. Workers connected with the solid waste management are at great risk of respiratory diseases and skin diseases because they are in direct contact with hazardous wastes, and harmful microbes .Site is Makhapura by pass road. Previously it was near Janana but now shifted Makhapura area.Sewage farm site is being used as dumping ground. The site is not provided with any fencing facility.

Characteristics of solid wastes:

The quality & quantity of solid wastes differ in different places. Factors that influence the quantity and composition are mean income of people, the type of sources, the increasing population, social behaviour, small industrial production. The HIG (High Income Group) people throw away more plastic, metallic and glass waste and also hazardous waste. Plastics, metals, glass and plastic bags account for 50% in Ajmer 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. Municipalsolid 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.

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

Table 2: Estimated MSW generation and area required for disposal in future.

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

Table 3: Composition of municipal waste of Ajmer city

S.No.	Component	Approx value (%)
	Vegetable, fruits and animal matter	20
	Dry grass and leaves	5
	Polythene bags	10
	Paper and paper products	10
	Plastic material	5
	Foam, hair, leather	2
	Cotton, jute	5
	Metals	2
	Rubber	2
	Concrete, earth, sand stones and dust	25
	Ash and coal	5
	Wood	0.25
	Glass and ceramics	2.642

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. Energy generation from MSW incineration using a Hybrid solar flue gas Chimney Power Plant (HSFGCPP) Heat is generated from burning waste this heat is used to generate electricity (using solar chimney) Carbonised waste can be used for steam turbine -power plant - hot water production- home use –artificial wind generation – wind turbine energy conversion - - Municipal Solid waste is dried before use .heat used for steam generation SSCP (Solar Chimney Power Plant). KE-ME-RE-Rotating turbine –generator-ME-EE. Volumes of waste should not go landfills.

Conclusion

The solid waste management system of Ajmer city is not well developed.

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 require-

ment 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 be recognised as a source for energy production. By adopting zero waste Ajmer can stop release of toxic waste from carbonizers, eg Carcinogenic furan, dioxins which endanger people health. 3 R (Reduce, Recycle and Reuse) can prevent economic loss, and material loss also. Pitfall and incineration should be stopped (Brenda Platt) (GAIA).

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