

AN ANALYSIS SOLID WASTE MANAGEMENT IN CHENNAI CITY

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Abstract

Solid waste is the unwanted or useless solid materials generated from combined residential, industrial and commercial activities in a given area. And it is a gigantic problem now a day, the purpose of the study is to analyse the solid waste management in Chennai city and suggest measures to promote the ecological management of solid waste in compliance with the principle of the 4Rs: Reduce, Reuse, Recycle, Recover and safe disposal.

1.INTRODUCTION

Waste has been generated as long as the human being has been on Earth. Waste has been recognised as a problem, first of all a hygienic problem. Recycling and recovery options have been discussed at least from the late 1960, however, during the last ten years there has been a remarkable increasing interest for the waste problem. Rapid and wide spread industrial development, unplanned urbanization, regular flow of persons from rural to urban areas and improper and inadequate action of the authorities entrusted with the work of pollution control and environment protection have large contribution to unhealthy and degraded environment. This affected quality of large number of persons. Apart from air and water pollution problems, most gigantic problem which modern cities and industries are facing is the solid waste disposal problem.

Ministry of urban development has launched swachhbharat mission on 2nd October 2014. This mission covers all 4041 statutory towns cities as per

2011 census. Solid waste management is one of the components under Sawachhbharat mission.

2. SOLID WASTE MANAGEMENT

Solid waste is the unwanted or useless solid materials generated from combined residential, industrial and commercial activities in a given area. It may be categorised according to its origin (domestic, industrial, commercial, construction or institutional); according to its contents (organic material, glass, metal, plastic paper etc); or according to Hazard potential (toxic, non-toxin, flammable, radioactive, infectious etc). Management of solid waste reduces or eliminates adverse impacts on the environment and human health and supports economic development and improved quality of life. A number of processes are involved in effectively managing waste for a municipality. These include monitoring, collection, transport, processing, recycling and disposal.

3. OBJECTIVES OF MSWM

The goal of effective Municipal Solid Waste Management (MSWM) services is to protect public health, the environment and natural resources (water, land, and air). To promote the ecological management of solid waste in compliance with the principle of the 4Rs: Reduce, Reuse, Recycle, Recover and safe disposal.

An effective MSWM service can be achieved only by improving the efficiency of MSWM activities, thereby leading to the reduction of waste generation, separation of MSW and recycling and recovery of materials, and generation of compost and energy.

4. CLASSIFICATION OF SOLID WASTE

- (1) Garbage** – putrescible (decomposable) waste from food, slaughter – houses, canning and freezing industries, etc.
- (2) Rubbish** – non putrescible waste, either combustible or non combustible's would include metals, glass, stones, dirt, masonry, and some chemicals.

- (3) **Large waste** – demolition and construction rubbles (pipes, lumber, masonry, bricks, plastics, roofing and insulating materials.) automobiles, furniture's, refrigerators and other home appliances, trees, tires, etc.
- (4) **Dead animals** – house hold pets, birds, rodents, zoo animals, etc. There are also anatomical and pathological wastes from hospitals.
- (5) **Sewage treatment process solids** – screening, settled solids, sludge.
- (6) **Industrial solid waste** – chemical, paints, sand, explosives, etc.

5. MANAGEMENT OF MUNICIPAL SOLID WASTE IN OLD INDIA

Since Vedic time the primary motto of India social life was to live in harmony with nature and in an hygienic environment Vedas, Upanishad, Smirithis, and Dharmashastra preach in one way or another a worshipful attitude towards plants , trees, mother earth sky, water, or land animals (all living creatures) thus polluting air, water, or land was regarded as god and goddess maintained them pure was considered to be the duty of every one.

- Manusmiriti – first systematic treatment of Hindus law also prohibited the throwing of garbage, dust, rubbish pieces of meat etc. On the high way and in water bodies are made it punishable
- Arthashastra has mentioned that maintaining sanitation habit was essential and in-viable
- The great epic mahabharatha also identified environmental pollution and that whole society may suffer from various diseases because of improper waste management
- Ayurveda emphasized on the wholesomeness of water and air pollution causes many type of diseases.

6. INDIAN CONSTITUTIONAL PROVISION REGARDING SOLID WASTE MANAGEMENT

Indian constitution is the largest constitution of the world provides solution to the problem of solid waste to its citizen and duty of government on solid

waste management two major laws of criminal deals with solid waste management,

- Indian penal code 1860
- Indian penal code 1973
- Fundamental rights article 21

7.COMPOSITION OF SOLID WASTE MANAGEMENT IN CHENNAI

Physical analysis	In percentage	Chemical analysis	In percentage
Food waste	8.00	Moisture content	27.60
Green waste	32.25	PH value	7.68
Timber (wood)	6.99	Organic content	39.06
Consumable	5.86	Carbon content	21.53
plastic	1.18	Nitrogen content	0.73
Industrial plastic	0.03	Phosphorous	0.63
Steel and material	3.14	potassium	0.63
Rags and textiles	6.45		
Paper	1.45		
Rubber and leather	34.65		
Inerts			
Total	100	Total	100

Source: Corporation of Chennai

Solid waste management in Chennai city The Corporation of Chennai is the largest generator of solid waste estimated at. It has a network of transfer stations and two landfill sites at Kodungaiyur and Perungudi. The following table provides an estimate of current daily waste generated on various types.

8. Land used for solid waste management in Chennai:

At present, the town is not having proper solid waste management system; the collected waste is simply dumped in the open dumpsite at Koundugaiyur and Perungudi without any treatment, which is situated 15 km away from town. These contaminate the surface water, groundwater and soil. The place becomes a source for breeding for flies and mosquitoes causing many communicable diseases. It is also noticed that the pigs and other domestic animals cause further nuisance. Keeping all these factors in view, an investigation is undertaken to study the various component of managing the solid waste and to suggest a scientific approach for proper solid waste management system for Chennai City

9. Name of the Zones with Attached Ward Numbers in Chennai

Chennai city is one of the emerging metropolitan city in India, it was divided in to ten zone divisions for the administrative convenience with 154 wards it shown in the table elaborately

Name of the Zones Attached with Ward Numbers

S .no	Zone	Name of the Zones	Wards
1	I	Tondaiarpur	1 to 13
2	II	Basin bridge	14 to 31
3	III	Pulianthope	32 to 49
4	IV	Ayanavaram	50 to 63
5	V	Kilpauk	64 to 78
6	VI	Ice house	79 to 96
7	VII	Nungambakkam	97to 113
8	VIII	Kodambakkam	114 to 129
9	IX	Saidapet	130 to 141
10	X	Adayar	142 to 154

Source : Chennai Corporation

Solid waste management is the one of the major activities of the CoC. This process is however very tedious as it involves collection of garbage generated at every house through various means and then moving the wastes to the two disposal sites or the dumping yards, geographically located at the northern most and southern most points of the CMA. All of the 154 city wards are estimated to generate about 4,840 tons of garbage a day. The cost of handling garbage is increasing year after year, while the budgetary allocations were kept the same. This put pressure on the city engineers to optimize the cost of handling and transporting the solid waste. The composition of solid wastes generated is given in Table 2. Note that the inert and the organic together comprise 67 per cent of all the wastes.

10. Solid waste Generation in Chennai

S. no	Sample zones	Total No of households	Total population	Total no of streets	Total garbage generation	Ratio between e and a	Ratio between e and a	Ratio between e and a
1	Tondiarpet	115554	468188	877	195614	2.39	0.41	174.85
2	Basin Bridge	89549	396408	655	162534	1.83	0.43	244.29
3	Pulianthope	123561	519200	913	201503	1.63	0.38	218.83
4	Ayanavaram	121698	378832	874	155758	1.64	0.45	240.79
5	Kilpauk	151185	574838	1321	260589	1.79	0.38	199.39
6	Ice house	77647	312306	606	154380	2.07	0.48	255.34
7	Nungambakkam	68833	289341	644	133399	1.98	0.46	216.14
8	Kodambakkam	132631	489991	1008	155347	1.57	0.30	153.61
9	Saidapet	120913	470696	850	139539	1.20	0.33	173.94
10	Adayar	142346	1536575	1191	297034	1.16	0.36	203.53
		1039917	5436375	8939	185697	1.72	0.39	208.53

Source : Computed by the Researcher

The solid waste generation among the ten zones comprising 155 wards in Chennai is analysed and presented in the table .and it provides the ratio between the households ,population and number of streets and total solid waste generation.

11. Conclusion

The study analysed data collected from 600 sample respondents from 10 zones comprising 155 wards and find the result that solid waste generated from the Chennai city is 185.69 metric tonnes every day by domestic households, and 0.39 kg of solid waste are generated by each individual in Chennai city and total

solid waste generated was collected from various sources and it was first transferred to ten transfer stations and shift to the two dumping yards.

12. Suggestions:

Solid waste generated by various sources is undertaken only by corporation of Chennai. It is not a good sign of development. So there is emerging need to join private sector to handling solid waste management.

To increase the awareness to the public about clean environment and reuse recycling practices of waste

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