

MUNICIPAL SOLID WASTE MANAGEMENT IN PIMPRI- CHINCHWAD CITY, INDIA-AN OVERVIEW

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ABSTRACT

The management of municipal solid waste has become an acute problem due to enhanced economic activities and rapid urbanization. Increased attention has been given by the government in recent years to handle this problem in a safe and hygienic manner. This paper presents an overview of current Municipal Solid Waste Management (MSW) in Pimpri-Chinchwad city, India & provides recommendation in system improvement. The collected data of MSW functional elements were based on available reports & meeting with responsible persons. Due to increase in population & changes in life style the quantity & quality of MSW in PCMC city has changed. Public awareness, suitable planning, infrastructure are the main challenges of MSW management in PCMC city. However the present situation of MSW management in this city, which generates 500 ton/day, has been improved since the establishment of an organization responsible only for MSW management. Source separation of waste, Vermi-composting, Mechanical composting & Bio-diesel are the main activities of PCMC in recent years.

INTRODUCTION

Solid waste generation is a continually growing problem at global, regional and local levels. Solid wastes are those organic and inorganic waste materials produced by various activities of the society, which have lost their value to the first user. Improper disposal of solid wastes pollutes all the vital components of the living environment (i.e., air, land and water) at local and global levels. The problem is more acute in developing nations than in developed nations, as their economic growth as well as urbanization is more rapid.

The government of India has taken many initiatives and implemented new technologies and methods by giving loans for setting up composting plants to encourage proper management of solid waste since the 1960s (MoEF, 2005). The MSWM problem was compounded with rapid urbanization. Due to increased public awareness of MSWM, a public litigation was filed in the Supreme Court, which resulted in the Municipal Solid Wastes (Management and Handling) Rules, 2000.

The city of Pimpri chinchwad is located in the western part of India with a population of about 21 lakh. The latitude of and longitude of PCMC are 18 37 N, 73 48 E respectively. The

manufacturing industries in this province have been developing and affecting the population as well as economic growth. With increase in population, the amount and type of solid wastes are changing and increasing continuously.

This paper presents an overview of current MSW management in PCMC. This paper contains quantity of generation of MSW, collection efficiency of MSW and various methods used in treatment of MSW.

MSW GENERATION AND COMPOSITION

Since 2006 estimate of MSW generation was carried out because of there was no proper scheduling and dumping system in PCMC. The absence of reliable data and statics for waste generation makes a regional and national evaluation of MSW management difficult. The PCMC has compiled statics about MSW management since 2006. Fig 1 shows the total quantity of MSW generated in PCMC per year. In 2006, 220000 metric ton of MSW was generated in PCMC. Increasing population level, rapid economic growth, and rise in community living standard will accelerate the future solid waste generation rate in PCMC. In 2013, 236673 metric tons MSW was generated. Since PCMC takes initiative to decrease the MSW by awareness among the peoples MSW generated in middle years is comparatively less.

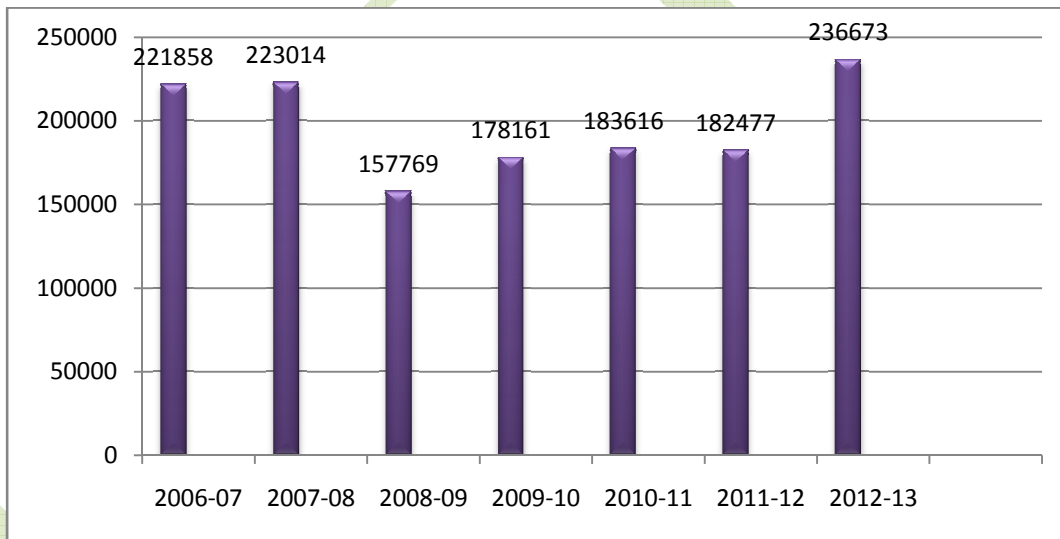


Figure 1: Total quantity of MSW generated per year in PCMC

The amount of MSW per capita per day from 2006-2013 is given in fig.2. The generation rate per capita per year varies considerably from year to year as in fig.2. MSW generation rate 0.52kg/person/day and 0.31 kg/person/day in 2006 and 2013 respectively. This shows decrease in MSW per capita per year due to reliable data is not available in 2006 and PCMC takes initiative to decrease the MSW by awareness among the peoples.

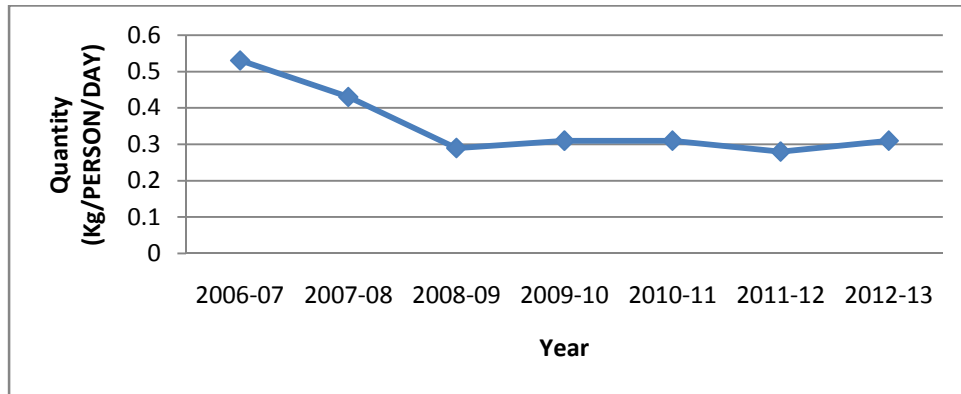


Figure 2: Total quantity of MSW generated per Capita per day in PCMC

The typical composition of MSW in PCMC is as shown in fig.3. As can be seen organic waste is main component of MSW. About 6% of the material is denoted as “other”, which mainly include construction and demolishing debris and hazardous waste.

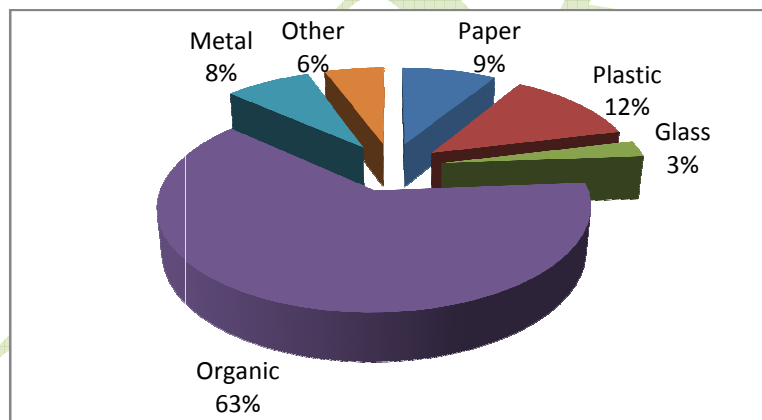


Figure 3: Composition of MSW in PCMC

COLLECTION AND TRANSPORTATION OF MSW

Before 2006 there is no proper MSW collection system in PCMC. As seen in fig.4, only about 40% of MSW per year collected. This shows improper collection system. As we seen in fig from 2006-2013 considerably increase in collection efficiency up to 100% is achieved because of well organized system. The PCMC spend all their efforts and budget for this services. There are two steps adopted for collection system in PCMC. In 1st step collection system, solid waste collection vehicles stop at each building to pick up the waste and transported in bin box. This system is operated daily. In 2nd step, collection and transport of MSW from bin box to garbage centre. Medical waste from health care establishment to other hazardous waste are generally collected and transported separately and for this waste separate disposal treatment is adopted. Private agency “swacha” use for MSW collection and transportation.

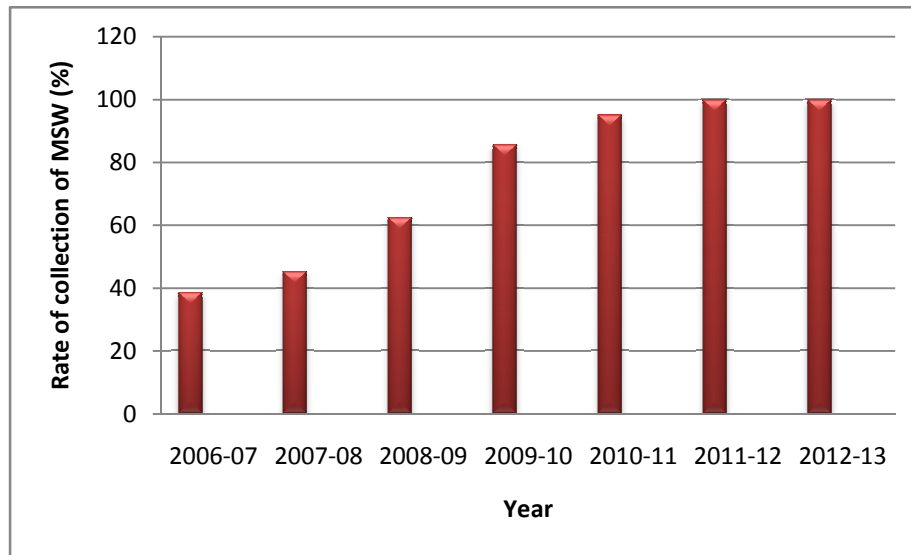


Figure 4: Efficiency of collection of MSW per year in PCMC

TREATMENT & DISPOSAL OF MSW

Steps followed by the PCMC for waste treatment:

- After the waste has been collected it is dumped at Moshi site, then it is kept for seven days for removal of leachate and odour.
- After the odour has been removed then the solid waste is sent for segregation.
- After segregation solid waste is treated in various ways like landfill, composting, recycling and fuel generation.

Many cities in India, deficiencies in the provision of waste disposal are the result of inadequate finance resources management and technical skills of government authors to deal with the rapid growth in demand of services. Pimpri-Chinchwad Municipal Corporation adopted treatments like landfilling, plastic recycling, Mechanical composter, Bio-diesel plant and vermicomposting methods for sustainable MSW treatment. As per the High court open dumping is totally banned in India because of that previous year open dump solid waste converted into landfilling. Since 2010 open dumping is totally avoided and recycling techniques used by PCMC to achieve 100% treatment on MSW.

CONCLUSION

The amount of solid waste collected in PCMC in 2013 was 235000 metric ton per year. In that about 70% of total MSW is recycled by various treatments like vermicomposting, Bio-diesel plant, and Mechanical composter. But current regulation system is not sufficient. The existing management system and the collection facilities do not fit the present requirements. Municipal

solid wastes are still collected without separation at the source, treatment facilities are limited and the collected wastes are mostly dumped haphazardly in open areas.

In India there is lack of organization and planning in MSW management due to insufficient information about regulations and due to financial restrictions. In the short term, the best policy might be to leave disposal methods without any controls, and use the resources available to upgrade them with environmental protection system. In the long term, construction of new treatment units could be planned. Public participation and awareness are also important issues in achieving the goals of the suggested management system but it is difficult and takes a long time to make people aware of the importance.

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