OPEN ACCESS at journalijcir.com

Research Article ISSN: 2395 -5775

STATUS OF SOLID WASTE MANAGEMENT IN MAHABALIPURAM AND REVIEW OF SOLID WASTE TECHNIQUES ADOPTED

Geetha R* and Rajalakshmi S

Abstract

Municipal Solid waste management is one which is very important issues in the urban environment in developing countries. Solid waste consists of organic and inorganic waste materials generated by various activities of the society. Improper disposal of wastes are polluting the environment. This paper addresses the status of municipal solid waste management practice in Mahabalipuram (which is one of the tourist places in Asia) and review of waste treatment technologies adopted to keep in the trends of waste management practice overtime. The Mahabalipuram area covers an area of 326sq km with the population of about 33,000 with floating population of 7000/day. The total waste generation in the city is found to be 5.5 ton/day at an average of 400gm-600gm/day from each individual house. This paper describes the current status of waste management in Mahabalipuram in terms of collection, transportation, and disposal. In Mahabalipuram, the problem is lack of segregation at source, in sufficient water facilities, lack of awareness among young people and high usage of plastics. The solid waste management makes mandatory for composting, vermicomposting and in Mahabalipuram bans the disposal of garbage in open place. In this study the solid waste techniques adopted within the area and elsewhere will be reviewed with recommendations.

Key Words: Municipal solid waste, Composting.

INTRODUCTION

Solid Waste Management is one among the basic essential services provided by Municipal in order to keep the country clean. The public sectors in many areas are unable to have services effectively, illegal dumping of domestic and industrial waste is a common practice rapid growth of industrialization and population explosion in country lead to migration of people from village to cities which leads to tons of waste increases daily. From many literatures it reveals the waste generation rate of 0.5kg per capita per day. At average 400gm-600gm per day per house is proposed to collect as the waste in Mahabalipuram.At present Mahabalipuram area generates 5.5 tonne per day of house hold municipal solid waste. The Mahabalipuram area covers about an area of 326 sq km with population 33000 with floating population of 7000per day. Solid waste management is a complex process because it involves many technologies and disciplines. These include technologies associated with the generation including source reduction on site handling, and storage, collection, transfer and transportation, processing and disposal of solid wastes

Solid Waste Management

The management of waste in Mahabalipuram covers entire area of 3 villages like Venpurusam, Pooncheri, Devaneri ,and places from Thirukalikundram road to Kovalam Salai Municipal solid waste management is done by NGO , the activity starts from collection of waste from household to the place of composting. The main objective of solid waste management is to remove the waste from places to prevent the spreading of diseases and land pollution The effective management of wastes depends upon the technologies adopted and here the main functions were,

- Collection of waste(door to door)
- Segregation of waste in source
- Sweeping each and every streets
- Transporting of waste
- Using technology for treatment of waste
- Disposal.

Technologies for waste mangement

Biocompost

There are several tanks each tank covers 2 tonne of waste, the tone is length 6 feet breadth 3 feet and

Department of Home Science Extension Education, Avinashilingam Institute for Home Science and Higher Education for women, Coimbatore
Correpondence and Reprint Requests: Geetha R
Received: February 10 , 2016 | **Accepted:** February 28, 2016 | **Published Online:** March 28 , 2016

Conflict of interest: None declared | **Source of funding:** Nil

height is 3 feet. Into the tank the waste and the cow dung were put and microorganism's breakdown organic matter and produces carbon dioxide (Co2), ammonia, heat and humans, after 65-90 day the relatively organic measure will be the end product. There compost itself is beneficial for the land in many ways, as soil conditioner, a fertilizer, and as natural pesticides for soil. This manure is put into sale; 1kg of manure is Rs.5, and many people from neighbours and hotels they were using for their land and gardens.

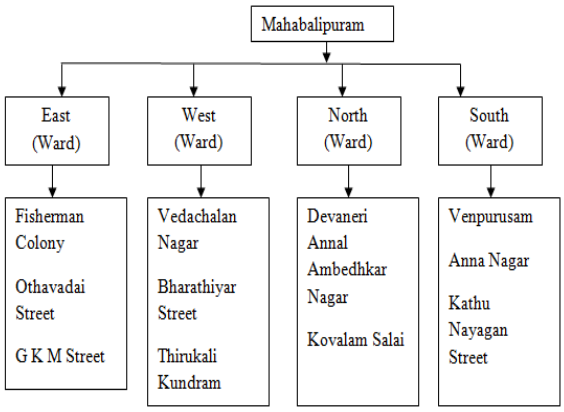

Figure 1

Collection of Wastes

Segregation of Wastes

Figure 2

Vermicomposting

Vermicompost is the product or process of composting using various worms' usually red, white worms. A series of pits were dug in length 6 feet, breadth 3 feet, and height of 2 feet with sloping sides. The pits were then filled with waste, the filled pits were covered loosely with soil and kept moist for a week and worms from breeding boxes were placed on top. The worms get down immediately into the soil. The compost pits were left for a period of 30 days within the 30 days the 10 kg of casting had been produced per kilogram of worms now the vermicompost is ready for application.

Figure 3 aWorm Breeding Tank

Challenges In Vermicompost Technology

- The worms for vermicompost are found to be cost ranges between Rs.800-1000/kg
- Some earthworms are very sensitive it will die in the summer season(ideal temperature 28 C.

Windrow Compost

The waste is dumped in the platform, items like woods,plastics,thermocol..etc is removed and innoculum will be sprayed on the waste the innoculum will be prepared using the mixture of cow dung ,water and cow dung. The waste is heaped in windrows with large rows in 2 meter height and 3 meter width, and length will depends on size of the land filling sites. The rows are turned to remove moisture, and to improve the oxygen content, and redistribute the cooler portions. As days go the size of the rows get reduced due to decomposition of the

Figure 4 Vermicompost

Figure 5 Windrow Platform

Figure 6

Figure 7 Biogas Plant

waste and volume reduction. Composting will be complete in 30 days. The end product is put into sale it is purchased by the farmers in rate of Rs 3per kg.

Challenges In Windrow Composting

- ❖ In rainy season the technology cannot be processed
- ❖ Lack of continuous power supply

Biomethanation Composting

Bio gas is produced in absence of oxygen due to decomposition of organic material through bacteria the process is referred as anaerobic digestion. Due to biological decomposition it take place in reactor, the bacteria produce bio gas .the bio mass can stays in the reactor for 3 weeks. The byproduct produced in this process is a solid residue which is high grade manure. In biogas plant the biomass like vegetable waste, animal excreta will be undergo decomposition in the absence of oxygen and form a mixture of gases. Bio gas consist 2/3 Methane(CH4) and 1/3 carbon dioxide(CO2), a little hydrogen sulphide and a little hydrogen .and decomposition of manure and other forms of organic waste from households or from industry. The biogas also used for cooking purpose.

Challenges In Biomethanation Composting

- ❖ It is not suitable for all location.
- ❖ The byproduct (gas) will contain many impurities.
- ❖ It is difficult to increase the efficiency of biogas.
- ❖ Slow process compared to Biofuel.

An analysis of various technological options, their salient features, environmental implications, cost norms and suitability to the biophysical environment of Mahabalipuram has been carried out. It indicates that windrow-composting, vermi-composting are the most appropriate techniques as far as is concerned. It is pointed out that the efficiency of the above methods depends on the characteristics of waste, such as, vermi-composting to near-homogenous fruit and vegetable wastes, biogas to slaughter house and fish-market wastes and windrow to heterogeneous wastes from any source. In the case of thermal conversion processes, of course, one has to be very careful to make sure that flue gas coming out of the stack must not pollute the environment. The analysis indicates that no technology is perfect. All of them have merits and demerits. Therefore, the choice of technology has to be done judiciously.

CONCLUSIONS

Waste generation and waste reduction reflect many complex economic and social factors. No city or town can adopt recommendations. Each must examine its own wastes and extends to waste reduction. There are many possible ways to implement the ways to waste reduction should be the first principle of solid

waste management. The combined efforts of un controlled wastes, poor handling and inadequate disposal safeguards for municipal wastes have implications for public health leading to the chances of transmits of diseases, polluted environment.

References

1. CPHEEO, Ministry of Urban Development, Government of India, New Delhi, (2000) Manu al on Municipal Solid Waste Management.
2. Landreth and Rebers, (1997), "Municipal Solid Wastes – problems and Solutions", Lewis Publishers.
3. Bhide and Sundaresan, (1993) "Solid Waste Management in Developing Countries IN SDOC.
4. Tchobanoglous *et al*., (1993) "Integrated Solid Waste Management" Mc Graw-Hill Publisher s.
5. Bilitewski *et al*., (1994) "Waste Management" , Springer.
6. Bhide and Sundaresan, (2001)"Solid Waste Management – Collection, Processing and disposal" Mudrashilpa Offset Printers, Nagpur.
7. Sharma and Lewis, (1994) Waste Containment Systems, Waste Stabilization, and Landfills: Design and Evaluation, Wiley Inter science Publishers.

****