

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 8, Issue 3, March 2019

Assessment of Solid Waste Management for Aurangabad City- Challenges and Solution

Prof. Salve U.L.¹, Wankhede Pooja², Pawar Harshal³, Baviskar Shruti⁴, Tadvi Anis⁵, Pawara Amruta⁶

HOD, Department of Civil Engineering, MGM's Polytechnic, Aurangabad, Maharashtra, India¹

Student, Department of Civil Engineering, MGM's Polytechnic, Aurangabad, Maharashtra, India^{2,3,4,5,6}

ABSTRACT: The haphazard growth in the urban population of the Indian cities in the recent past is creating a great demand for solid waste management. In developing countries solid waste management is becoming a major public health and environment concern. This trend can be linked to our changing food habits, lifestyles and living standard. Due to less priority, limited funds and poor planning many Indian cities dump their solid waste in open places. Aurangabad with a population of around 1.2 million is one of the major cities in Maharashtra which currently generates around 400 tons of solid waste. Currently Aurangabad Municipal Corporation (AMC) disposes its waste at exhausted landfill at Naregaon (8.9 ha) which is about 5km from city. Considering the exhaust condition on Naregaon landfill, municipality planners are searching for another land in the vicinity but in vain due to severe oppose from local people. Motivated by Aurangabad Municipal Corporation in developing the city, this paper tries to find the suitable landfill sites using multi criteria decision analysis, overlay analysis of Geographic Information System (GIS) and Site Suitability. Solid waste if not handled properly badly affects the environment. The waste has potential to pose threat to land air and soil. The poor solid waste management leads to social, economical, health and environmental problems. Aurangabad is famous for being tourist city of the Maharashtra state. The problems associated with solid waste management in the city of Aurangabad require immediate attention and action. At the surface the reasons for improper solid waste management include growing population and city. However these are only few of the causes. The paper presents the status of solid waste management and treatment practices in Aurangabad city. The paper throws light on the situation of solid waste generation source, handling, treatment and disposal.

KEYWORDS: Solid Waste Management, Municipal solid waste, Geographic Information System

I. INTRODUCTION

Solid Waste Management (SWM) is an organized process of storage, collection, transportation, processing and disposal of solid refuse residuals in an engineered sanitary landfill. It is an integrated process comprising several collection methods; varied transportation equipment, storage, and recovery mechanisms for re-cycle material, reduction of waste volume and quantity by methods such as composting, waste-to-power and disposal in a designated engineered sanitary landfill. The Implementation of Municipal solid Waste (MSW) Management is an important component of the Government of India's "Swatch Bharat Mission" (SBM). Due to increase in population and changing life style the generations of solid waste also increase. A large quantity of solid waste coming from houses, street sweeping, commercial and industrial sectors. If solid waste disposed off on land in open areas then it causes leaches problems, water pollution and also effect on environment and health. If improper management of solid wastes increases it cause diseases, odor nuisance, hazards to atmosphere and effect economic losses. Basically in Urban, the solid waste generates in large quantity and that disposed on landfill which creates rodents and fleas to waste site. The disposal attracts birds which create serious problems to Air flight. Disposed (Landfill) Emission of Carbon dioxide and Methane other gases traces. Aurangabad city generates large amount of solid waste. This large amount of waste poorly disposed and untreated. The city does not have an engineered or scientific landfill site and the capacity of existing dump site cannot cater the future demand of the waste generated. So, there is an immediate need for designed scientific integrated solid waste management.

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II. RELATED WORK

The rapid growth of Aurangabad has huge demand for solid waste management and other services which seems beyond the local government body. The area of this research paper is Aurangabad, Maharashtra, India. Aurangabad city is divided into 9 zones each given around 9 to 13 wards. Aurangabad city has an area of about 139 km² and a population of 1.2 million comprising of 114 wards. It currently generates about 400 Metric ton (MT) of municipal solid waste from about 0.25 to 0.3 million housing units. From various community bins and collections points 120 vehicle which comprise of trucks, tractors & hydraulic loader Auto Determination of Potential Landfill Site for Aurangabad City Using Multi Criteria Evaluation collect garbage and transport to Naregaon landfill which is exhumed already as shown in disposal site which was landfill now converted to open dumping ground of about 0.89 hectares receiving around 400 ton of waste daily. Waste is being segregated post collection near Central Naka area of Aurangabad city. Overall 10% of disposed waste is being recycled the AMC along with Civic Response Team (CRT) is playing an import role of reducing the amount of waste going to landfill by applying waste segregation at various wards. The AMC has been working on various latest methods to reduce waste reduction at source level which include encouragement by public awareness campaign and penalties on citizens for unmindfully spreading solid waste. Existing landfill view at Naregaon. With the exhaustion of Naregaon landfill site, municipal stakeholders are in a process of selecting an alternate landfill site but with manual methods only. However urban planning analysis by using GIS is a very important to make better decisions.

Modern and unorganized lifestyle is putting great pressure on natural resources. To cater the needs of human beings different products are made. The specialized products created by industries demand careful handling and after treatment. It is not only the product but the packaging which also needs attention. To create awareness amongst common man regarding the improper disposal of solid waste is a tough job. Disposal of solid waste without proper treatment imposes negative effect on soil, water, air, human health and aesthetic value.

1. Uncollected wastes accumulate on the streets, public spaces, vacant lots, thus creating illegal open dumps. Residents can also simply throw their wastes at the nearest stream or burn them.

2. Present practices regarding solid waste include disposing waste in low lying areas, dumping in vacant place, storing waste in outskirts of city. There are many problems associated with solid waste. The waste is handled without taking any precautions. In many case of solid waste management it is observed that there is public apathy and lack of coordination between different civic bodies.

3. The main shortcomings are related to inadequate manpower, financial resources, implements, and machinery required for effectively carrying out various activities for municipal solid waste management

4. Aurangabad was recognized as the fastest growing industrial city in Asia with industries spread over different parts.

5. Aurangabad city is one of the major industrial centers in central Maharashtra. The variety of Industrial centers located includes five stars at Shendra, Chikalthana, Waluj, Pandharpur and Paithan MIDC area. These industries have provided growth opportunity. The Aurangabad Municipal Council (AMC) was established in 1936. It became a Municipal Corporation in 1982. As per last census 2011, the total population of the district was 11, 77,330. The current population of Aurangabad urban agglomerate is over 15.5 Lake. The Ajanta and Ellora Caves, surrounding city are UNESCO World Heritage Sites. By population it is the 5th largest city in Maharashtra after Mumbai, Pune, Nagpur and Nashik. Aurangabad is located on the banks of the River Kham. The entire City is situated at the latitude of 19°53'50"N and longitude of 75°22'46"

6. It has been observed that solid waste is major source of pollution.

7. In a city of Aurangabad waste generation is around 40 TPD. The characteristic of waste depends on its type. With the increase in population of the city waste generation also increases.

The objective of this research article is to present the scenario of solid waste in city of Aurangabad. The problem of solid waste became severe in the month of February 2018. The situation badly affected well being of the people and environment.

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III. EXPERIMENTAL RESULTS

It's important for the environment the spread of unmanaged waste and rubbish is a key detriment to the environment. Waste that is not dealt with effectively, and left to rot in big piles in the open, can lead to air and water pollution which is harmful for the environment and any living organisms that have to deal with the repercussions of the pollution. Not only these, but when a natural area is the victim of widespread littering and rubbish dumping, the area ceases to sustain its natural beauty. We have all bared witness to the destruction of what would have been a beautiful natural landscape by the dumping of waste. By having an effective waste management plan, which either disposes of the waste properly or recycles it efficiently, you are doing the environment a huge favour in a time when we need it most.

As humans, we create far more waste than any other living organism on the planet, and we are also susceptible to its backlash if we don't deal with it properly. If waste and rubbish that has not been properly disposed of or recycled becomes too prominent it can begin to cause air and water pollution, thus posing a great threat of bugs and virus to people worldwide. Waterborne diseases such as gastro and cholera can Form when an area of water is contaminated with waste, having an effective waste management plan greatly reduces the risk of the spread of disease.



(a)



(b)

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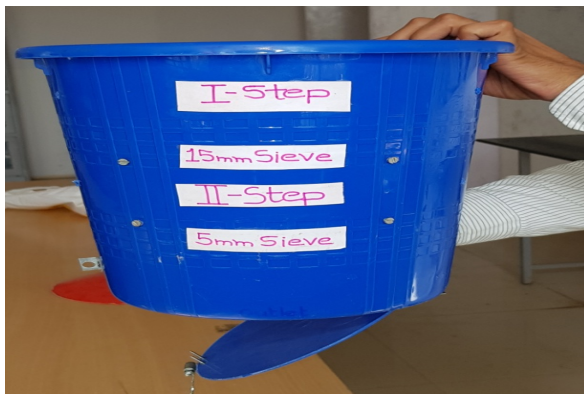
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(c)



(d)



(e)



(f)



(g)



(h)

Fig 1: (a) Solid waste in Kham River, (b) Solid waste in open area, (c) 15mm sieve, (d) 5mm sieve, (e) Fertilizer collecting door, (f) Lock and hinges of fertilizer collecting door, (g) Kitchen waste in small particle, (h) Addition of microbes.

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Working model which is made up of plastic bin and inside the working model provided 15mm or 5mm sieve which is made up of metal. Sieve is provided to partial size distribution of solid waste.

Step:1 Separation

Collects kitchen waste in house and separate it manually, convert large particle into a small particle to easily decompose the waste short time. Particle size should be more than 15mm so it will retain on 15mm sieve.

Step:2 Addition of Microbes

Make the slurry of microbes in 1liter water for 1kg of microbes and Add madhyam compost maker microbes 30gm for 1kg of kitchen waste spread the slurry of microbes on kitchen waste and mix it properly.

Step:3 Add in Compost Maker Bin

After addition of microbes properly kitchen waste put in compost maker bin, and it will retain on 15mm sieve after 3days it will minimize the volume of organic waste due to decomposition and it will passed in 15mm sieve and retain on 5mm sieve. After 4 days it will minimized the volume of organic waste due to decomposition and passed 5mm sieve and retain compost tray. After the above process the compost is ready for use. This fertilizer is used for kitchen garden and ponds.



(i)



(j)

Fig: (i) Composter bin with fertilizer, (j)Fertilizers

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PARAMETERS	MAADHYAM	COMPOMAC
Cost	Less	More
Efficiency	More effective	Less effective
Available	Easy available	Easily not available
Use	Easy	Complicated
Time period	Less (within 1weeks)	More (within 2weeks)
Quality of fertilizers	Good as compare to Compomac	poor as compare to Madhyam

Table:1 Compare result Madhyam Compomac Compost Maker

IV. CONCLUSION

The proposed construction activities associated with the proposed works will generate a number of waste materials. These include:

- vegetation and demolition wastes from site clearance
- excavated materials
- construction waste
- chemical waste
- municipal waste

Waste generated from the operational phase of the road widening project is likely to be restricted to small volumes associated with intermittent maintenance works (e.g. asphalt from resurfacing works) and landscape upkeep (vegetation). The potential impacts of wastes arising from the construction and operational phases of the road widening project have been assessed. Provided that the mitigation measures outlined above are in place, potential impacts to the environment associated with waste generated by the construction and operational phases of the project will be controlled. With the recommended procedures/measures in place, the construction and operational wastes generated / disposed as part of this project, will not lead to any significant adverse environmental impacts.

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