

A Review on Municipal Solid Waste in the Nagpur City

Vaibhav Rajurkar, Faizan Isani, Ajay Rathod, Rahul Itankar

Civil Engineering, Dr. Babasaheb Ambedkar College of Engineering and Research, Rashtrasant Tukdoji Maharaj
University, Nagpur, Maharashtra, India

ABSTRACT

Municipal Solid waste management is one of the major environmental problem all over the world. Solid Waste Management which is already a mammoth task in developing country like India is going to be more complicated with the increase in urbanization, changing lifestyles and increase in consumerism. Urbanization is now becoming a global phenomenon, but its consequence are more pronounced in developing countries. Improper Management of Municipal solid waste causes hazards to surrounding people. Various study reveal that about 90% of MSW is disposed of, in open dumps and landfill, which create problem to public health and to ecosystem. Composition of waste varies with different factors like living standards, climatic conditions, socio- economic factors, etc. The focus of the present paper is to investigate the quantity, quality and its management in the Nagpur City. The present paper evaluates the current practices prevalent in Nagpur to deal with this solid waste and problems associated with it. The study is concluded with a few fruitful suggestions which may be beneficial for the disposal of MSW.

Keywords : Municipal Solid Waste, Management, Urbanisation.

I. INTRODUCTION

to Municipal solid waste was not a problem in ancient days but now a days where cities are growing at faster rate and one thing is common that we can find huge number of heaps of garbage all over the cities. Huge volume of waste is generated and management of solid waste is major challenge. These solid waste generated needs to be collected, transported and shall be disposed off properly before creating adverse impacts on environment. Gradually the different systems were involved and a scientific method which was developed by using 3Rs which is reduce, recycle, reuse. Reduce the waste stream is the most important significant of all the options to manage waste. If waste is not generated then we do not have to invent ways to dispose off. Reuse is the next desirable option in this, material can be used again and again for same purpose. Recycling is the next step in priority it includes the collection of used reused items.

Composting is the best way to dispose of the solid waste in a proper way, there are lots of composting techniques which are Indore method, Bangalore method, vermin-composting, landfill etc. Composting is a technique which creates “wealth from waste”. After composting the solid is used as fertilizers which are very beneficial for crops yield. “Cleanliness is godliness” is the mantra of Mahatma Gandhiji, Father of nation. To fulfill the Mahatma Gandhi’s dream Shri Narendra Modi himself started the cleanliness drive. Clean India, Green India which is kwon as “Swatch Bharat Abhiyan”.

As we look into the world scenario developing countries generate more solid waste compared to developed countries. The various problems that are found in developing are population continues to grow, Waste per capita is rising as economies development, Migration from rural cities to urban areas continues, Number and size of cities increases, Globalization

results in industrial and hazardous waste generation shifting to developing countries, Political interference also hampers smooth running of local authorities in developing countries, Vulnerability of pollution of surface and groundwater is high because local authorities rarely considered it in developing countries, In terms of MSW disposal, land filling remains the most popular choice with waste management authorities in developing countries, Recycling in developing countries tends to be practiced on a community or on a for-profit basis. Solid waste management is not restricted to person, group, area, concerned list or non-exclusive, non-rivalled and essential, the responsibility for providing the service lies within the public domain being of local nature it is entrusted to local authorities.

Nagpur also known as ‘Orange City’ is spread across an area of 217 sq.km with population of 2.5 million (Census 2011). The city is located at the geographical centre of India. Nagpur is the Third Largest city in the state of Maharashtra after Mumbai and Pune and the largest in Central India.

Nagpur is also being developed as a Smart City under the Government of India Smart City programme. Nagpur is the geographical centre of the country and is the major trade centre in the region and is well connected. Nagpur Municipal Corporation (NMC) spreads over an area of 227.38 sq. km with a total population of 24.06 lakh (more than 3 million currently) according to the census of 2011.[2] Nagpur city makes up 4.73% of the total urban population of the state. The city is now among the fastest growing cities in India and is rapidly emerging as commercial, retailing and logistic hub.[1] Nagpur Municipal Corporation (NMC) is currently generating an average of 1100-1200 TPD of waste, with an average per capita generation of 444 grams per person per day. NMC has been a progressive urban local body and has taken some measures for improvement of waste management in the city; however, there is still a need for a lot of focus and considerable improvement. For

the effective management of waste, the city has been divided into 10 zones. Door-to-door waste collection is practiced in all wards, except outer city areas. NMC has privatised collection and transportation of the solid waste and awarded the contract to Kanak Resources Management Limited (KRML) in December 2007. KRML is responsible for the doorto-door collection of waste and transportation of waste to the dumpsite at Bhandewadi.

Approximately 255 vehicles of various types are deployed by KRML for the transportation of waste, along with handcarts, small tricycles and tipper trucks for primary collection from the households.[1]

II. CASE STUDY OF NAGPUR CITY

Nagpur is situated in the eastern part of Maharashtra. The coordinates of the city lie between 78°30" to 79°30"E and 20°30" to 21°45"N,[1]. The average altitude is 310.5 m above mean sea level. Nagpur is in the exact centre of the Indian peninsula. The city has the Zero Mile Stone locating the geographical centre of India, which was used by the British to measure all distances within the Indian subcontinent. Nagpur is well connected with the major urban centres across India.

Table 1. Detail Of Secondary Storage Points In NMC Area

ZONE NO.	NAME OF THE ZONE	TOTAL NO. OF SECON DARY POINTS	DETAIL OF TRANSFER STATION
1	Laxmi Nagar	20	Sita Nagar (Temporary) Rahate Colony (Temporary)
2	Dharampeth	19	Ambajhari T- Point (Temporary)

3	Hanuman Nagar	14	Budhwari Bazaar, Sakkardara (Permanent)
4	Dhantoli	30	Ganesh Peth (Temporary)
5	Neharu Nagar	12	Tajbag Maidan (Temporary)
6	Gandhibagh	15	Sokhta Bhawan (Temporary)
7	Satranjipura	16	
8	Lakadgang	10	Gangabai Ghat (Temporary)
9	Ashi Nagar	13	Gangabai Ghat (Temporary)
10	Mangalwari	21	Chaoni Chowk (Temporary)

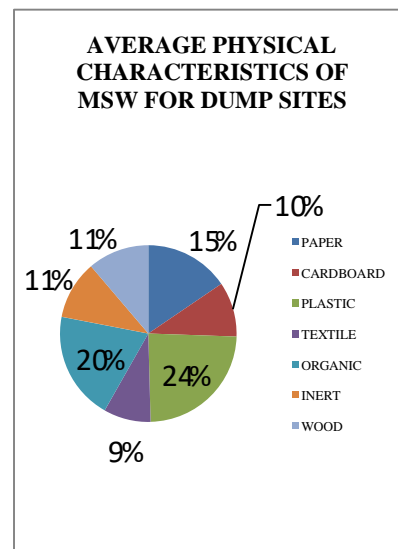


Figure 2. Characteristics Of Waste

Table 2. Legislation And Laws

Sr. No.	Rules	Year
1.	The Hazardous Waste (Management, Handling and Tran boundary movement)	1989
2	Biomedical Waste Handling Rules	1998
3.	Municipal Solid Waste (Management and Handling) Rules	2000
4.	The Batteries (Management and Handling) Rules	2001
5.	National Urban Sanitation Policy	2008
7.	Plastic Waste (Management and Handling) Rules	2011
8.	E-waste Rules	2011
9.	Swacch Bharat mission	2014

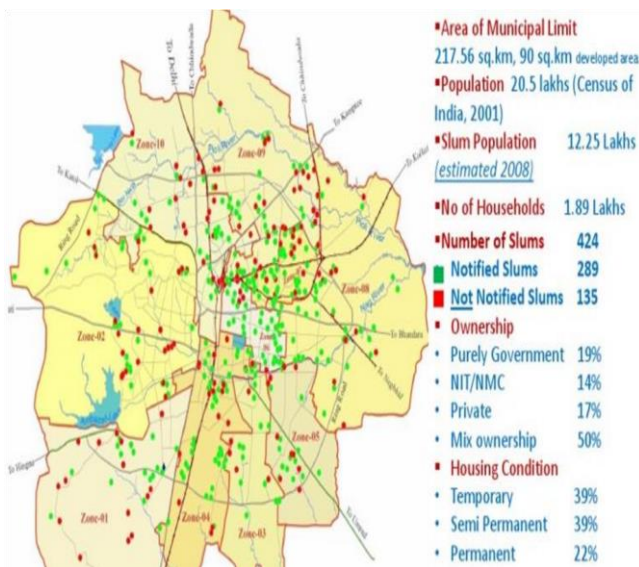


Figure 1. Slum Location Map For Nagpur City

Currently, there is no working waste treatment facility in Nagpur. Waste collected from various parts of the city is dumped at Bhandewadi dumpsite, which is approx. 10 km from the city centre.

III. DISSCUSSION

In the olden times, the method of disposal was incineration because the quantity of waste disposal was very less, but now as urbanization, migration, privatization, industrialization come into power, the generation of waste has tremendously increased. Due to increase in the quantity of waste generation new methods like land filling, composting, were adopted.

The new method in Nagpur city includes privatisation of waste collection and transportation services, which involves the collection of waste from doorsteps and transportation to the dumpsite. NMC has privatised collection and transportation of the solid waste and awarded the contract to Kanak Resources Management Limited (KRML) in December 2007.

KRML is responsible for the doorto-door collection of waste and transportation of waste to the dumpsite at Bhandewadi. In the year 2008, Nagpur city came up with the concept of a binfree city and eliminated more than 80% of primary collection points/ community bins from the city. There is still scope for improvement in the collection and transportation system, including improvements in logistic management, optimal utilisation of vehicles, increasing coverage of outer city areas, and bringing efficiency to segregation practices.

However , as per the Municipal Solid Wastes (Management and Handling) Rules, 2000, the landfill site should be large enough to last for 20-25 years and should be away from habitation clusters, forest areas, water bodies, monuments, national parks, wetlands and places of important cultural, historical or religious interest.

But the present site are having habitats of humans in the range of 500km,band famous temple of Nagpur Baps Shri Swaminarayan Temple is about 3.4 km from bhandewadi, though the temple is at an adequate distance but as the amount of untreated waste in the site is increasing tremendously, various problems like air pollution. Various nearby hospitals suggested that the amount of patients suffering from bronchitis, asthma, skin problems are increasing rapidly. Also, two major fires had engulfed the municipal waste emitting poisonous gases and making it difficult for residents nearby, which means that frequent fires have been reported from the site due to unscientific disposal of waste at bhandewadi.

After studying all the aspects and scenarios of waste disposal of Nagpur city, the above methods were not satisfactory and apt under various situations.

Therefore, we suggest some solutions that can be undertaken.

Rather that dumping all the waste at one particular site which is very close to human habitation, we suggest some other engineered dumping sites which follow the rules of Municipal Solid Wastes (Management and Handling), 2000. The first one is the vacant revenue department land near Mandwa village in MIDC Butibori 36 kms from the city, Around 250-300 acre of area can be used and the land is even bigger than the present site at Bhandewadi and can be used for more than 30 years. The other sites that can be used are mining site at Kuhi-Dongargaon on Umred Road. Also a site which is 20 km away from the present site of Nagpur can be used. Bellari in Kalmeshwar tehsil and Titur in Kuhi tehsil can also be used.



Figure 3. Map of Bhandewadi and nearby mines sites.

IV. CONCLUSION

With an exponentially increasing population, it is even more important to be considerate about how well individuals take care of the planet. Land is limited, resources are limited, and the health of the plant can only be heard to a limited extent. As more and more waste is generated yearly, it is evident that this increasing trend is unacceptable in the long run. Landfills and recycling can only temporarily mitigate the immediate consequences of this large waste production. However, if the problem of municipal solid waste is to be truly addressed, the roof of the issue must be looked at first. If less waste is generated in the first place, the challenge of finding environmentally feasible ways of disposing of waste will be much easier.

V. REFERENCES

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