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Characteristics of Municipal Waste in Pandharpur

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Abstract - *Solid waste management is been a vital environmental issue since the beginning of 20th century. It's been a challenge for the city' authorities in developing countries. The increasing generation of waste, adds the economic burden on the municipal budget as a result of the high costs associated to its management, Cities like Delhi, Mumbai, Bangalore, and Kolkata are real time examples where waste management becomes the major problem. In this paper we have addressed few issues of waste management in Pandharpur city. It is Solapur district (M.S.) as a very famous religious place Pandharpur, generates nearly 36 MT / Day of waste which is significant amount. The samples of waste shows that there has been considerable part of waste are organic waste & It is amount of generation increases significantly during fare time. This paper shows the overall characteristics of waste lies in Pandharpur city. The information provided is useful to suggest the appropriate treatment of waste*

Key Words: Solid waste management, Pandharpur, MSW, characteristics, composition of waste.

1. INTRODUCTION

Waste management is worldwide phenomenon, rising population, industrialization & urbanization are responsible to produce tremendous amount of waste. Today, the urban areas of Asia generate about 760,000 tons of municipal solid waste per day, which is equal to about 2.7 million m3 per day. In 2025, this amount will raise to 1.8 million tons of waste per day, which becomes 5.2 million M.cu per day. These estimates are conservative; the real values are probably double of this amount.

At present approximately 36 MT/day of solid waste is generated from the Pandharpur including contribution due to floating population. Pandharpur is well known as a religious place & every year thousands of people used to visit this place; this consequently increases the floating population of the city. The daily flow of pilgrims also creates unhygienic conditions around Pandharpur. The hotel food is usually consumed by the visitors and the waste is thrown into the surface drain. The pilgrims offer flowers, garlands, coconuts etc. in the temple and the river. The waste generated by these offering remains undisposed and untreated. In course of time decomposition takes place generating a foul polluting the environment.

2. LITERATURE REVIEW

Solid waste management is a multi-dimensional issue; the effective system is not only based in technological solutions but also environmental, socio cultural, legal, institutional and economic linkages that should be present to enable the overall system to function. [1] Since the MSW is heterogeneous in nature, a large number of samples have to be collected and analyzed to obtain statistically reliable results. [3] The planning of waste management strategies needs tools to support decisions at all stages of the process.[2] Accurate quantification of the waste to be generated is essential for both the short-term management & proper design of facilities (long-term). Designing without rigorous knowledge may have serious economic and environmental consequences. [2]

The city like Bangkok is facing the challenge of environmental problems seriously. Municipal solid waste is one of the key issues to be solved sustainably. It is seen that the disposal of MSW by landfilling is not the optimal solution anymore for Bangkok. [4] The waste-to-energy scheme has been implemented by using incineration technology with a capacity of 500 tons per day to produce 9 MW, followed by the second phase of 2,000 tons per day with 26 MW [4]

The organic fraction of MSW is an important component, not only because it constitutes a sizable fraction of the solid waste stream in a developing country, but also because of its potentially adverse impact upon public health and environmental quality. (UNEP 2005)

Various studies reveal that about 90% of MSW is disposed of unscientifically in open dumps and landfills, creating problems to public health and the environment. [5] Majority of the municipal authorities do not have preparedness to set up waste processing and disposal facilities. [7] (CPCB Report)

3. STUDY AREA

The city of Pandhari Vithoba situated in 17°40' north latitude and 75° 23' east longitude, forty miles to the west of Sholapur, is one of the most frequented places of pilgrimage not only in the State of Maharashtra but also in the India, and ranks first amongst the first in the State with an aggregate congregation of four to five lakhs. It is the head-quarters of the taluka bearing the same name and has, according to the Census of 1971, a total population of 53,638 with 5,407 occupied houses and 9,838 households. The town with an area of 4.7 square miles lies along the right bank of the Bhima on trap overlaid with poor black soil. The river is also known here as Chandrabhaga due to the particular shape of the

river-bed that gives an appearance of the moon as it is seen on the bright as well as dark half of every Hindu calendar month.

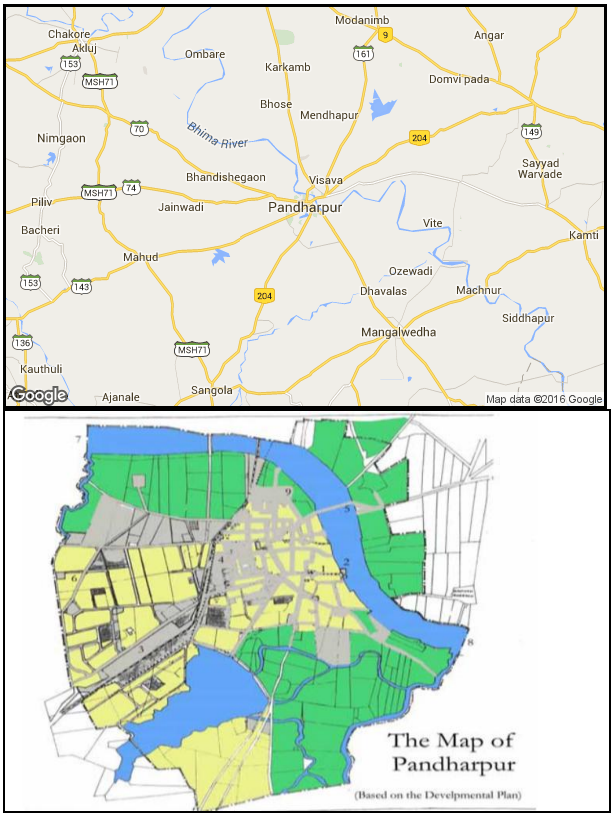


Fig : 01Showing Map of study area

When the river is full the broad winding Bhima gay with boats with bright lion, horse and unicorn figure heads; the islet temples of Vishnupad and Narad; and on the further bank the rows of domed and spired tombs; the crowded cloth-brightened flights of steps leading from the water, the shady banks, and, among the tree tops, the spires and pinnacles of Pundlik's and other large temples, is a scene of much life and beauty

4. MATERIALS & METHODS

The physical survey is carried out in the city & the observations are recorded. The sampling is done at different locations viz. at domestic source, commercial source & at dumping site. These samples are collected & Homogeneous mixture is prepared & then analyzed in laboratory to understand the composition of waste in the city.
Also the samples from commercial, domestic, Dump yard sources are analysed separately & source wise compositions determined.

Sampling Details-

Following satellite map of Pandharpur shows that the some part of city can be clearly identify as a pure residential area which is shown as by yellow lines & some of it can be identify as a commercial area, from these locations the samples are collected.
Sampling No 01: Purely Residential area
Sampling No 02: Commercial area in the city
Sampling No 03: At dumping yard.

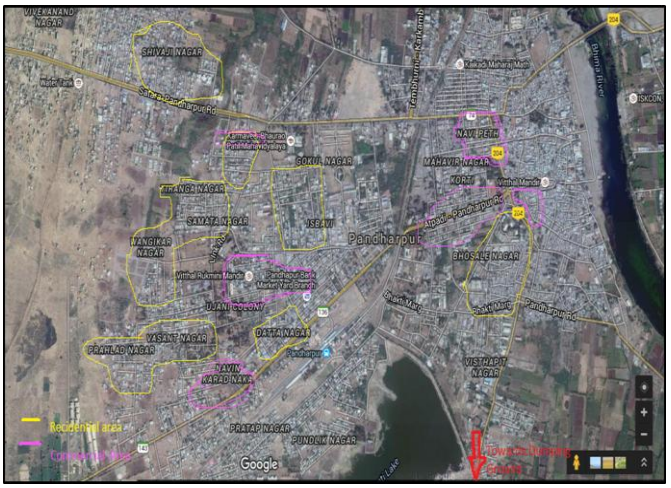


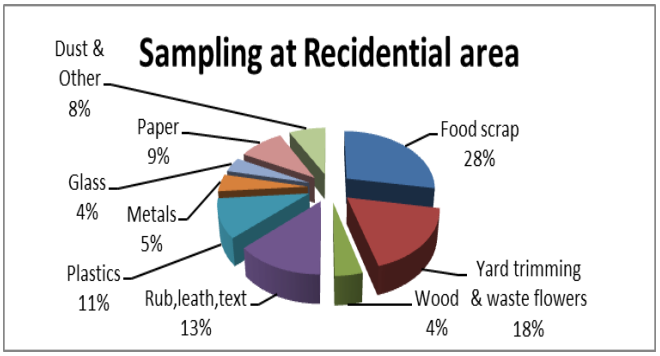
Fig No 2: Showing Sample locations in study area.

From above mentioned sites we have collected 10 samples each weighing 1kg from every location. These samples are collected in polythene bags & for further analysis these are transported to the laboratory where these samples are thoroughly mixed & sorting of material is done & waste was classified in 9 categories & then it was separate & weight is measured & recorded. Also the moisture content of same samples is been find out in laboratory & Temperatures of waste on field also recorded. The secondary data needed was collected from Municipal Council.

4. RESULTS & DISCUSSION

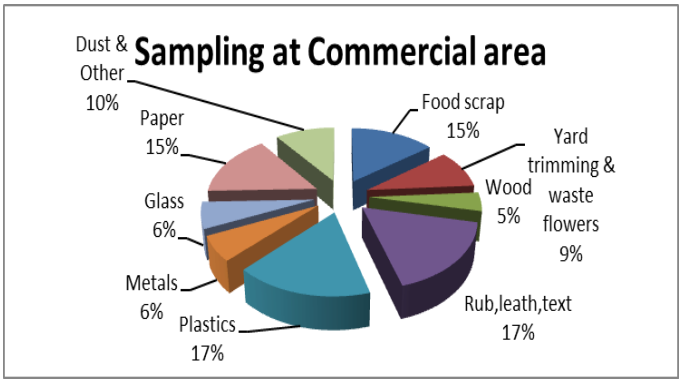
Present S.W.M. Scenario In The town:
At present approximately 36 MT/day of solid waste is generated from the town including contribution due to floating population. The solid waste is collected in community bins. There are 318 community bins in the town. The solid waste is carried away by means of eight trucks up to dumping ground (compost depot) in Sant Peth area. The daily flow of pilgrims also creates unhygienic conditions around Pandharpur. The hotel food is usually consumed by the visitors and the waste is thrown into the surface drain. The pilgrims offer flowers, garlands, coconuts etc. in the temple and the river. The waste generated by these offering remains undisposed and untreated. In course of time decomposition takes place generating a foul polluting the environment

Characteristics of waste:



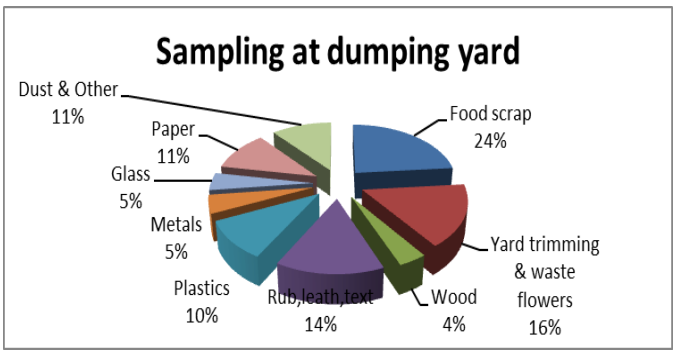
Graph No 01: showing observations of sampling No. 1 –At Residential area

Waste characteristics can clearly defined by the constituents of the waste, Here in this study waste samples are collected from various parts of city, & waste composition is determined. Samples collected from purely residential area shows that the waste found to be moreover organic, The major portion i.e. about 50% of waste is Biodegradable it contains 28 % Food waste from kitchen, 18 % is from yard trims & other waste flowers etc. It was found that Percentage of Non-Biodegradable things is comparatively less in this area. We found 11 % of total waste was plastic & about 5 % is metal.



Graph No 02: showing observations of samples from Commercial area

Few Samples are collected from Commercial area of the city where waste contains comparatively more artificial contents. Here if we consider Plastic, Glass, Metal, Paper, Rubber Leather & Textile material as a recyclable then percentage of recyclable things is increase to 61%. The sample also contain about 15 % of food scrap & 9 % trimming material is there, but overall this area can be identify as recyclable area from waste management point of view (Shown in Graph No2)



Graph No 03: showing observations of samples from Dumping Yard

The third location of sampling was dump yard, it was the place where all waste comes at the end & it contains mixed waste from the city. The waste contains 24 % of food waste, 16 % of yard trimming & 4% part of waste is found to be wood particles, here the total 45 % of waste is possible to recycle if segregated well. (Shown in Graph 3)

5. CONCLUSION

Pandharpur city is generates about 36 MT of waste per day, The solid waste is collected in community bins & transported by means of trucks to dumping yard. Study elaborates the waste samples from Pandharpur city, this has been identified that the characteristics of waste varies with the area within the city, samples from purely residential areas shows moreover organic character, & The commercial areas shows more part as a recyclable & non-biodegradable,, so there is need to collect this waste separately & according to the composition of waste the treatment for waste management can be decided.

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[12]http://trimbakeshwar.in/maharashtra/Solapur/Pandharpur/Pandharpur-Temple.aspx

Anexure 01 Showing Waste Sample collection details at Dumping yard

SAMPLEING STATION.	1	2	3	4	5	6	7	8	9	10	%
CATEGORY	(wt in gm)	(wt in gm)	(wt in gm)	(wt in gm)	(wt in gm)	(wt in gm)	(wt in gm)	(wt in gm)	(wt in gm)	(wt in gm)	percentage
Food scrap	267.99	250.5	168.05	241.05	338.7	240.15	300	210.15	150.1	190.25	23.5694
Yard trimming & waste flowers	120.26	160.3	180.2	210.26	150.55	223.3	72.23	220.05	165.56	145.55	16.4826
Wood	45.32	31.2	38.58	25.5	30.26	50.2	36.5	21.23	54.2	44.5	3.7749
Rub,leath,text	133.3	157.2	135.3	120.26	115.36	175.35	110.1	200.2	134.35	136.6	14.1802
Plastics	50.2	88.5	144.23	141.36	65.6	65.36	119.36	126.03	110.36	111.32	10.2232
Metals	33.3	44.36	60.36	45.2	34.36	36.36	82.55	40.36	65.36	44.36	4.8657
Glass	45.35	40.3	50.36	20.36	44.69	57.36	45.8	84.1	42.86	41.28	4.7246
Paper	145.36	110.26	141.26	50.36	110.36	105.25	137.58	55.89	124.6	119.45	11.0037
Dust & Other	158.82	117.6	81.43	145.76	110	46.51	95.78	42.15	152.6	166.64	11.1729