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Solid Waste Collection, Disposal and Segregation: A Case Study of Akluj Town (Maharashtra-India)

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ABSTRACT: In worldwide scenario solid waste management is big issue, only the important places of city and towns are having solid waste management facilities. Many towns and cities are littered with waste due to improper waste management. Due to that the people living in that area get suffered from many problems related to health and sanitation. Due to the improper management of solid waste rural environment gets disturbed. The present study is carried for management of solid waste and to suggest proper disposal methods for Akluj town. From study, it was found that composting is better option for solid waste management in Akluj town, because the quantity of putrescible waste is more.
KEYWORDS: Rural Environment, Composting, Solid waste management.

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I. INTRODUCTION:

It is observed that cities and towns are littered with garbage (MSW) and giving ugly look at many places in the town. Only important locations of a towns are maintained and leaving many other places chocking with uncollected waste. The collected waste is disposed on un-attended land-fills and it is almost long-way to go to ensure that entire waste collected by a town is processed and only remnants is disposed through landfill. Infect, remnants classifying as "inert / non-recyclable has to be converted into other useable product so to have vision and mission of 'Zero' land filling achieved. Drawing of time – targeted action plan for management of MSW by each city and town in utmost essential need otherwise, increasing quantities of waste and not having required waste processing and disposal facilities will create un-healthy environmental conditions.

II. INFORMATION OF AKLUJ

Town Akluj is situated 13 km east of Malshiras, near Solapur District's western border with pune, in southern Maharashtra .Velapur is 11km south of Akluj. The pilgrim site of Pandharpur is accessible from Akluj. Pune Lohegaon Air- port serves Akluj. Akluj is a city in Solapur district, Maharashtra, lndia .The Nira river flows by Akluj. The name Akluj is derived from town Goddess, also Captain moor the author of Hindu Pantheon, describes it as "akhloos", a large respectable town with a well-supplied market facilities. Khandali, Malshiras, Malinagar, Shankamagar, Malewadi villages surround Akluj .Two Co.operative Sugar Factories are in Akluj .Situated in17'50'north latitude and 75'00' east longitude. Akluj is a large market town on the Nira, about 12km to the north–east of Malshiras. The town was formerly very flourishing with a large trade in cotton which has now almost disappeared. However it still continues to be the principal trading centre in the Taluka, the main articles sold being Cotton, wheat and Groundnut.

III. OBJECTIVES OF STUDY

Following are the primary objectives of the study
- To study various sources of waste generation like domestic, markets, industrial, institutional etc.)
- To study existing collection and disposal system of waste.
- To suggest suitable system of waste disposal/treatment.
- To study waste generation rate of town ward wise.

IV. POPULATION AND WASTE GENERATION SCENARIO OF AKLUJ TOWN.

Akluj town is situated near taluka place which attracted the localities from the nearby villages to settle down there. Akluj is also having large no. of business and employment opportunities. The distance of Akluj from Pune city is also less so the trade expansion and job facilities are increasing day by day which leads to

increase in population. According to recent survey done by the Gram-panchayat the no. families living in the town are 4800.Total no. of wards in the town are Six.

- **The population of last three decades of town is as follows:**

Population	Year
1991	31432
2001	32494
2011	39919

- **Total no.of hotels are as follows:**

Classification of hotels is done on the basis of number of chairs.

Number of Chairs	No.
4-10	52
10-20	27
20-30	07
30-50	08
Total	94

- **Total no. of hospitals is as follows:**

Classification of Hospitals is done on the basis of number of beds.

Number of Beds	Hospitals
5-10	20
10-20	12
20-30	07
30-50	06
Total	45

- **The total numbers of institutes, industries and families are shown as follows.**

Particulates	Numbers
Families	4800
Institutes	18
Industries	5

Waste generation of Town

Waste generation includes all waste materials discarded weather or not they are latter recycled or disposed in treatment unit. Waste generation rate can be used to estimates the impact of new development on the waste stream.

As the number of families, institutes and hospitals are more in Akluj town, the waste generation rate is more. The total waste generation rate of Akluj town is about 18 tonnes per day. The amount of waste that is coming from the families is more about 7 tonnes per day.

V. TYPE OF WASTE GENERATED

The town generates dry as well as wet waste.
Classification of waste generated is as follows.

1. Dry Waste

Type of Wastes	**Quantity per Day (Kg)**	**Quantity per Year(Tonnes)**
Total Compos-table matter	8000	2920
Glass	500	150
Paper	400	146
Plastic	400	146

Metal	500	150
Rubber	200	73

2. Wet Waste

Type of Wastes	Quantity per Day (Kg)	Quantity per Year(Tonnes)
All kitchen waste	7000	2550

VI. CURRENT METHOD OF DISPOSAL

The current practice of disposal of wastes is open dumping. The dumping site is located near the Nira River. The total area available for open dumping of wastes is about 4 Hectare. The area available for the dumping of wastes is totally low laying area which helps to make dumping easier. The distance of dumping site is 6 Km from the center of town. Sometimes the waste is directly disposed in the river.

VII. CURRENT COLLECTION SYSTEM

At present the waste generation rate of Akluj city is about 17 tonnes per day in which the waste from residential area is more. There are seven wards in the Akluj Town. Grampanchayat of Akluj provided Door to Door collection system for the collection of waste. They provided two garbage vans for each ward. The capacity of Garbage van is 500Kg, but due to the less number of garbage van time required for collection is more and more trips are required.

Bins provided for collection of Waste

Van provided for collection of waste from Bins

VIII. WASTE MANAGEMENT OPTIONS

- **Recycling**

The quantity of glass, rubber, plastic waste generated is about 926 tonnes per year, which is more so it's recycling is possible. As the quantity of recycling material is more so this treatment option is suitable for the treatment of waste generated in the town.

- **Reuse**

The quantity of paper, generated in the town per year is about 222 tonnes per year. For this recycling is better option to reduce the waste. With the help of reuse the total cost required for the treatment of waste is considerably reduced

- **Composting**

The Compostable and kitchen waste generated from the town is about **5470** tonnes per year which is more. For the composting the land is available in sufficient quantity in the town. The site conditions are also favorable for composting at that place. The manure generated from the composting is used for gardening in the town. The total cost required for composting is less as compare to other method so it will be better option for treatment of solid waste in Akluj town.

Assume total volume reduction after composting waste is 30%
Total Compost Generated per Year = 0.7x5470 **= 3829 tonnes**
Cost of one bag of compost (50Kg) = 400/-
Number of bag produced per year= 77000
Revenue Generated Per Year = 30800000/-

IX. CONCLUSIONS

The conclusions of the study are as follows-

- The Total waste generated per day is 17 tonnes and future waste generation rate is about 27 tonnes per day.
- Amount of domestic waste generation is more because the number of families that are living in the town is more.
- Recycling and reuse is suitable for the treatment of all glass, paper, and metals.
- Composting is suitable for the treatment of all compostable waste generated in the town.
- The extra revenue generated from composting to the grampanchayat is about 30800000/-

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