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SOLID WASTE MANAGEMENT IN TANUR MUNICIPALITY, KERALA

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Abstract *The collecting, treating, and disposing of solid material that is discarded because it has served its purpose or is no longer useful. The present system is focused on collection and transportation of largely mixed un segregated waste. Recourse recovery from the waste and safe disposal of residual waste in scientifically designed landfills are grossly neglected .Rules have now been put in place for sustainable solid waste management ,but the capacity to plan and manage the system and ensure the enforcement of the rules is the major challenge Improper disposal of municipal solid waste can create unsanitary conditions, and these conditions in turn can lead to pollution of the environment and to outbreaks of vector-borne disease-that is, diseases spread by rodents and insects.*

The tasks of solid-waste management present complex technical challenges. They also pose a wide variety of administrative, economic, and social problems that must be managed

1. INTRODUCTION

Proper waste management is an essential part of society's public and environmental health. "solid waste" means any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, resulting from industrial, commercial, mining, and agricultural operations, and from community activities. Nearly everything we do leaves behind some kind of waste. It is important to note that the definition of solid waste is not limited to wastes that are physically solid. Many solid wastes are liquid, semi-solid, or contained gaseous material .Solid waste management is a term used to refer the process of collecting and treating solid wastes. It also offers solutions for recycling items that do not belong to garbage or trash. As long as people have been living in settlements and residential areas, garbage or solid waste can be changed and used as valuable source. Solid waste management should be embraced by each and every household, including the business owners across the world. The industrialization has brought a lot of good things as well. One of the adverse effects of industrialization is the creation of solid waste

1.1.Area of Study

Tanur is a Municipality located in the Malappuram District in the state of Kerala. Its ancient name is Tyndis. Tanur lies between latitude 10.97 North and 75.87 East. Tanur is mostly Muslim populated, so the culture is based on Muslim tradition. It is situated on the coast 9 kilometres north of Tirur. Tanur was a part of the kingdom of the same name in medieval name in medieval times. Later it became part of Kingdom of Zamorin

1.2. Objectives of the Study

The purpose of the study are

1. To evaluate the current practices and management of solid waste in the town of Tanur located in the district of Malapuram in the state of Kerala

2. To study the developmental activities undertaken by the Local self-governing entities and the society at large.

3. To find the coordination of Government agencies which imparts basic services and also for their efficient distribution of resources and their maintenance.

4. To analyze various properties and environmental impact of municipal solid waste.

5. To come out with strategies for suitable collection, segregation, recycling treatment methods for municipal solid waste in study area.

2. SOLID WASTE AND ITS MANGEMENT

Kinds of solid waste

Some of the major types of solid waste management are as follows:

a. Municipal Solid Waste (MSW)

b. Hazardous Wastes

c. Industrial Wastes

d. Agricultural Wastes

e. Bio-medical Wastes.

The combined effects of population explosion and changing modern living standard have had a cumulative effect in the generation of a large amount of various types

of wastes. Solid waste can be classified into different types depending on their sources:

2.1 Municipal Solid Waste (MSW)

The term municipal solid waste (MSW) is generally used to describe most of the non-hazardous solid waste from a city, town or village that requires routine collection and transport to a processing or disposal site, Sources of MSW include private homes, commercial establishments and institutions, as well as industrial facilities.

However, MSW does not include wastes from industrial processes, construction and demolition debris, sewage sludge, mining waste or agricultural wastes. MSW is also called as trash or garbage. In general, domestic waste and MSW are used as synonyms. Municipal solid waste contains a wide variety of materials. It can contain food waste (like vegetable and meat material, leftover food, eggshells etc, which is classified as wet garbage as well as paper, plastic, tetra-pack, plastic cans, newspaper, glass bottles, cardboard boxes, aluminium foil, meta items, wood pieces, etc., which is classified as dry garbage.

2.1. Problem Associate with Improper Management

Improper management of solid waste cause mainly following problems

1. Dispersed solid waste from the illegal open dumps often blocks the drains and sewers .Ultimately these blockages are creating flooding and unhygienic conditions. Flies breeding are directly linked with open solid waste dumps. During summer the flies are increasing their population so rapidly due to these waste dumps and they are very effectual vectors that spread disease in the community .blocked drains and wastewater

2. Flooding in the municipal area due to blocked drains are greatly supporting the mosquitoes breed and they are spreading the malaria and dengue in municipal area.

3. Proportion of food waste in open dumps and waste drains are providing an attractive shelter for rats. It was also reported that these rats are spreading disease, damaging electrical cables and other materials in the study area. The open burning of collected solid waste causing air pollution issues

4. Uncollected solid wastes from few locations in the city are degrading the urban environment and discouraging efforts to keep streets and open spaces clean.

5. Discarded polythene bags in collected solid waste are generating an aesthetic nuisance and they may also cause the death of grazing animals which eat them

6. Open dumps on the roadside. Mainly biodegradable waste in to plastic cover made unhygienic condition it also include of dangerous items (such as broken glass, razor blades, hypodermic and other healthcare wastes, aerosol cans and potentially explosive containers and chemicals from industries) may cause risks of injury or poisoning, particularly to scavengers and school going children . This practice is totally unhygienic.

7. Different segregated solid waste materials, such as plastic bottles and medical supplies, are not being properly cleaned or sterilized by local scavengers.

8. During rainy seasons, produced leachate from the open dumped sites is causing serious pollution to water bodies

9. Illegal burning of solid waste in municipal area is creating serious negative impacts on outdoor air quality. Furthermore, it is also causing illness and reducing visibility.

10. Polluting water bodies such as canal and rivers with solid waste cause total contamination of water bodies.

3. DATE COLLECTION AND DATA ANALYSIS

Major source of Waste generated in municipality is Households, Commercial industries, Hotels, Educational institutions, Markets, Auditoriums and road cleaning wastes. As per the information of NEERI (National Environment Research Institute) a person generated 300-gram wastes daily

Table1*:* Quantity and category of waste generation from various source

Sl No	Type of waste	Total waste (kg)
1	Degradable	13140
2	Non-degradable	8760
	total	21905

3.1 RECOMMENDATIONS FOR SOLID WASTE MANAGEMENT

1. Strengthen the activities of Haritha Karma Sena with the help of municipality by providing necessary resources.

2. Promote public awareness programs regarding Solid waste

3. Encourage to adopt ecofriendly waste disposing methods like biogas, aerobic compost etc at household level itself.

4. Encourage the public to support Hartha Karma Sena for better non-biodegradable waste disposal.

5. Installation of waste bins for public places especially at commercial areas, markets, bus stands etc.

6. Encourage to adopt ecofriendly waste disposal techniques like biogas for waste management at hotel, restaurant etc.

7. Ensure proper monitoring and function of the existing projects for better solid waste management

8. Encourage Public Privet Partnership for better Solid waste management

3.2 SYSTEM OF MANAGING NON BIODEGRADABLE WASTE

1. Segregated storage of waste at 100 %sources

2. Source level processing of domestic waste – Provision of facilities

3. Provision of storage bins at appropriate locations to eliminate collection of waste on round

4. Daily removal of waste from all collection storagebins

5. Maximum processing at source level wherever possible and balance only to community level]processing plan

4 PROPOSED SYSTEM IMPROVEMENTS

Component	Proposed system
Segregated storage at source	Segregated storage at 100% sources. Separate bins for biodegradable and non-biodegradable waste at source Non biodegradable waste are divided and store in to three items. Separate storage of harmful waste i.e. Non-recyclable non bio degradable.
Source level treatment of Bio degradable waste	Process the bio degradable waste through compost pits or house hold waste management equipments i.e. biogas plants, compost unitsetc.
Primary (D-to-D) collection of Non biodegradable wastes	Add 40 harithakarma sena to the existing 48 harithakarma sena for the proper covering of all households and shops in every division .divide harithakarma sena in to different group for collection in two different

Table 2: Proposed waste management facility –non biodegradable waste

Sl no	Facility	Capacity (TPD/ KgPD)	Location	purpose	Number
1	MRF	2000 sq. ft	Community level	Non bio waste segregation and storage	1 unit
2	Vehicle		Community level	For collecting waste	1Units
3	Cotton bags	1mx0.6m	Community level	For storage of wastes in houses	18000 unit
4	Bottle bin	0.45x.045 x.8m	Community level	For collecting plastic bottle from public places	8 units

Table 3: Proposed biodegradable waste management facility

Sl no	Facility	Capacity	Area	Number
1	compost	4 bin	Schools and collages	6 unit
		2 bin	Government offices and bus stand	5 unit
2	Ring compost		House hold level	5000 units
3	Biogas plant	150kg	Houses and schools	200 units

3.1 SELECTION OF PROCESSING TECHNOLOGY

When the composition of the Municipal Solid waste is critically evaluated, it is seen that it contains 30-50% organics, about 5-10 % recyclables and certain constituents having a calorific value. The choice of processing technology is accordingly based on mainly the proportion of these constituents.

The organic constituents of Municipal solid waste can be converted to manure. The processing of the waste to reduce the pollution potential and also to recover some value can be achieved through biological route.

4.1Approximate Cost For The Operation And Maintenance Of Plants(Biodegradable)

Management of non Biodegradable Waste					
Operation & Maintenance Budget (Monthly)					
Tanur Municipality					
				Receipt	**Expenditue**
NO	**ITEM**	**QUANTITY**	**RATE**	**AMOUNT (RS)**	
1	vgf	44	7725		**339900**
2	Vehicle expenses	1500	300		450000
3	Office Expenses - Stationery, Communications				10000
4	Power Charges				10000
5	Maintenance to the machinery				10000
6	Salary to Management Staff	6			60000
8	Sale of Recyclables	500	6.00	3,000.00	
9	Sale of Shredded Plastic	500	15.00	7,500.00	
10	Userfee from Households (Average)	3500	50.00	175000	
11	Userfee from Shops (Average)	1000	75.00	75000	
12	Miscellaneous				5000
	Total				**479900**
13	Haritha sahaya sthapanam charges				55000
	G.TOTAL			**260500**	**534900**

4.2Approximate Cost For The Operation And Maintenance Of Plants(Biodegradable)

Description	**Number / Area**	**Description**	**Total** (Rs)
Labour,harithakarma sena	10	Rs 500x150	75000
Power Charges	LS	Rs. 2,000 / month	24000
Water Charges	LS	Rs. 1000 / month	12,000
Inoculums		Rs. 30000 / month	36000
Uniform,Protective measures for workers	30	Rs. 1000	30,000
Misc. expenses		Rs.2000/month	24,000
Total			**201000**

5. CONCLUTIONS

The current issues in Tanur Municipality are inadequate waste management infrastructure, the informal sector and unscientific waste disposal. The project aimed at studying the causes of these drawbacks and to come up practicable proposals and recommendations. For the purpose of this project both various methods were adopted such as literature review, survey, fieldwork as such. During literature review apart from journals and books on solid waste management , legislations were also referred. The datas collected from various sources were analysed and proposals were made.

The development activities undertaken by the Government and local authorities has to be revised according to the needs of the area. Booming population is one of the major reasons that overshadows the waste management process.

The major problems that are associated with improper waste management are illegal dispersal of solid waste management, flood in municipal area due to blocked drains, dumping of food waste in open dump and drains and improper and non timely collection of solid waste.

The necessary infrastructural developments were made as per the requirements. Study on the economical aspect of the waste management was conducted to analyse the extent of application and practicability of the installation of infrastructure.

Proper disposal of solid waste management is important not only for the individual based action plan but also a major necessity for the well being of the nation. Government and local authorities must take initiative to draft and bring into effect stringent penal legislation which will impose on every citizen an obligation to keep the surroundings were he lives to be waste free

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