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CASE STUDY: MUNICIPAL SOLID WASTE MANAGEMENT

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ABSTRACT:

The solid waste management is one of the important environmental problems in India. The material which came from human activities and the material is the useless, unwanted and improper management of municipal solid waste causes a hazard to the inhabitant. Various studies show that about 90% of municipal solid waste is disposed of off unscientifically in open dumps and land areas, creating problems for public health and the environment also. The present survey of case studies conducted on municipal solid waste management in a few cities across India is reviewed to come into solid waste management. Several data concerning solid waste management in Bangalore have been collected to understand the problems being handled by Bangaloreans. Solid waste management will be known as the discipline related to the control of generation, storage, collection, transfer, deal with, and disposal of solid waste.

KEYWORDS: Solid waste, management, Agriculture waste, geographical information system.

1. INTRODUCTION:

The generated waste consists of many types that are not segregated at the source in the majority of cities across India. Although some municipalities have taken measures for bringing recognition to the general community about the separation of wastes, no significant development has been achieved in waste management. People dispose of wastes of all types which are then collected for discard. The majority of solid wastes end up in landfills and thus create health hazards due to unplanned and unscientific methods followed in waste disposal. Due to rapid growth, urban areas are facing a severe shortage of landfills and as a result, the community at large is now at the risk of hazards due to delay in waste disposal.

The city of Bangalore, once a pensioner's fairyland, has come to know lately as "garbage city" thanks to garbage pileups owing to lack of junkpile. Open scrap of garbage breeds flies, mosquitoes, cockroaches, rats, and other pests that unroll infection. Unfortunately, Solid waste management did not receive the attention it deserved until now. It was never taken seriously either by the public, concerned agency or authorities. The community has woken up from its rest now and severely looking for some sensation to address the problems.

In this survey the earlier case studies conducted on Aurangabad, Manipur and Kolkata are reviewed and few expensive data concerning Solid Waste Management in Bangalore collected to understand the problem. As a case study, a survey of production and waste management within the campus, located in the IT city Bangalore is carried out to come up with a believable waste management system within the campus. The case study conducted throws some light on the number of waste products as well as its management.

The tasks associated with the management of municipal solid waste from the point of production to final disposal can be classified into six functional elements.

1. Waste generation
2. Storage
3. Collection
4. Transportation
5. Segregation & Processing
6. Disposal

OBJECTIVES:

- To bring awareness on solid waste management at the basic level.
- To introduce the formation of local potable mini biogas plants.
- To demand youth on the campus to label the global problem

METHODOLOGY:

As the topic is new, the team members decided to gather a literature review of solid waste management exercises in Indian cities to understand the extensive practices across India.

2. Municipal solid waste disposals and treatment

Composting (aerobic composting and vermicomposting) and waste-to-energy (WTE) (boiler, BIOMETHANATION), are the two prime waste disposal mechanisms being effect in India. Waste to energy mechanism for disposal of municipal solid waste is a relatively new abstraction in India. Although these have been attempts and tested in developed countries with positive output, these are yet to get off the ground in India mostly because of the fact that financial viability and credible is still being tested. Different functions for the disposal and treatment of Municipal solid waste are explained below.

a. Biodegradation:

Biodegradation is a biological way of reusing the wastes where the decline process is carried out by bacteria, fungi, insects, worms, and other creatures that eat dead material and reuse it into new forms. Through composting, we speed up natural biodegradation and change wastes to valuable assets. This kind of elimination of waste can be transferred out only with organic waste which is about 76% of total waste.

b. Automated solid waste processing:

The resolution to apparatus solid waste collection automation is a composite one and involves a number of parts that should be surveyed, including engineering, risk management, technology common sense, costs, and public receiving yet has a lot of advantages for both local as well as the municipal corporation but at the same time, it increases the risk factor intricate in safety and health issues of the solid waste collection laborer.

c. Incineration:

Incineration is a waste ministration task that involved the combustion of organic mixture involved in waste materials. The heater of waste materials transfers the waste into ash, flue gas, and heat. The ash is mostly formed by the defunct constituents of the waste and may take the form of solid lumps or particulates to convey by the flue gas. The heat produced by incineration can be used to enhance electric power. Incineration with energy convalescence is one of several waste-to-energy automation such as gasification, plasma arc gasification, pyrolysis, and anaerobic dissolution.

d. Recycling:

It is a process of transform substance (waste) into new products to prevent waste of potentially useful substances, reduce the consumption of new raw materials, decrease energy usage, reduce air pollution (from incineration) and water pollution (from landfilling) by decreases the need for "conventional" waste ejection, and lower greenhouse gas release. Waste management has some significant advantages that it leads to less usage of raw materials, decreases environmental impacts appear from waste treatment and ejection makes the surroundings cleaner and healthier, saves on the junkyard area and usually saves money.

e. Membrane Bioreactors:

Membrane bioreactor (MBR) is the fertilization of a membrane system like microfiltration or ultrafiltration with a suspended extension bioreactor and is now widely used for municipal and industrial raw material.

3. CASE STUDY FOR PHYSICAL AND CHEMICAL MSW

a) The physical composition of municipal solid waste (%):

Table I : Physical Composition of municipal solid waste in percentage

Serial Number	Product	Percentage
1.	Vegetable	0.30
2.	Paper	0.09
3.	Plastic	0.12
4.	Cardboard	0.04
5.	Textiles	0.04
6.	Leaves wood	0.06
7.	Leather	0.00
8.	Battery	0.00
9.	Electronic item	0.02
10.	Metal	0.01
11	Organic	0.23
12	Glass	0.03
13	Debris	0.05
14	Biomedical	0.02
	TOTAL	1.00

Nearly 54% of total waste composes household wastes and rest contributes to waste products from other sources. Composition of Municipal Solid Waste is examining and interpreted in Table I and Table II as shown.

Following the above-mentioned enumeration, it is examining that 70% of municipal solid raw activity has been outsourced and 30% is managed by Bruhat Bengaluru Mahanagara Palike. The collection of waste takes place on a door-to-door basis using pushcarts and auto tippers. This forms the primary assembly of waste, where waste is collected in unsegregated form as the on-site separation is not observed.

b) Chemical composition of municipal solid waste (%):

Table II : Chemical Composition of municipal solid waste in percentage.

Sr. No.	Constitute nt/Property	Minimun	Maximu m
1.	C	13.00	42.60
2.	N	0.28	1.23
3.	P_2O_5	0.46	0.92
4.	K_2O	0.45	1.07
5.	Moisture%	13.80	40.90

Secondary assembly and transportation involve compactors, tipper-lorries, mechanical sweepers, etc. The waste collection from households is transferred to the treatment sites through trucks. Thus, the unsegregated waste reaches the handed out plants. Few plants are established for leaf-mold the organic waste as well as reuse of plastic, metals, etc. Dry waste collection centers are set up for reuse dry materials like plastic, paper, glass, and metals.

4. CONCLUSION:

In this paper, various techniques of disposal and behaviour of solid waste are explained in detail. The various techniques followed in Aurangabad, Kolkata, Manipur, and all other cities have been observed and their drawbacks are noted down. An attempt has been made to collect data on raw management on the college campus as well as the cities area. From the study of another case study. A detailed feasibility report will be prepared with the help of the municipality department and the report will be submitted to the management to consider setting up plants within the land area. As there is a plan for setting up of new campus, it is envisaged that the management takes our idea for consideration.

The technology should be based on Environmental protection rules (reduce, recycle, reuse and recover) Public awareness, political will, and public involvement as essential for the successful implementation of the legal provisions and to have a combined approach towards sustainable management of municipal solid raw materials. There should be sufficient health and safety precaution for workers at all stages of waste material handling. Annual reports of the addition of the strategies for the collection of solid waste shall have to be formulated.

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