



Term Paper

Environmental Science and Engineering Department Indian Institute of Technology Bombay



Municipal Solid Waste Management Strategy for Class – II Cities in India

Pranav Vishwanath Mahadkar (19D180019)
pranavmahadkar07@iitb.ac.in

Naman Agarwal (19D180017).
namanagarwal@iitb.ac.in

ABSTRACT

MSWM is one of the major natural issues of Indian urban areas. Ill-advised administration of MSW makes dangerous occupants. Different investigations uncover that around 90% of MSW is discarded informally in open dumps and landfills, making issues to general wellbeing and the climate. In the current review, an endeavor has been made to give a complete survey of the attributes, age, assortment and transportation, removal, and treatment.

INTRODUCTION

Quick industrialization and populace rise in India has prompted the movement of individuals from towns to urban areas, which create a great many huge loads of MSW day by day. The MSW sum is relied upon to increment altogether soon as the nation endeavors to achieve an industrialized country status by the close to future. Poor assortment and insufficient transportation are dependable for the gathering of MSW at each alcove and corner. The administration of MSW is going through a basic stage, because of the inaccessibility of appropriate offices to treat and discard the bigger measure of MSW produced every day in metropolitan urban areas. Informal removal causes an antagonistic effect on all parts of the climate furthermore, human health. Generally, MSW is discarded in low-lying regions without avoiding potential risk or functional controls. Hence, MSWM is one of the major ecological issues of Indian megacities. It includes exercises related to age, stockpiling, assortment, move, and transport, handling, and removal of strong squander.

METHODOLOGY

Information relating to the physical and synthetic synthesis of the MSW has been accumulated for different urban areas. An endeavor has been made to set up a connection between the Calorific Value and the biodegradable and paper parts of the MSW produced in different urban communities. The urban communities have been ordered based on the populace, for example, urban communities have a populace between 5,00,000 to 20,00,000 as Tier 2 urban areas. Utilizing the projected populace figures (Census) for the years alongside the situations expressing which kinds of advances could be utilized for squandering age to energy transformation as proposed the projected MSW to the Waste potential for India for the given years has been determined.

MSW to ENERGY TECHNOLOGIES

Biomethanation / Anaerobic Digestion: In bio methanation, the natural biodegradable portion is deteriorated (enzymatically) by microbial activity also, this strategy is exceptionally helpful for squanders containing a high level of natural biodegradable matter (>35%) and a significant degree of dampness (>45%) alongside a C/N proportion of 20-30%. The force created from MSW by bio methanation strategy can be dictated by utilizing a numerical relationship.

MSW DISPOSAL & TREATMENT

The two driving creative instruments of garbage removal being embraced in India incorporate treating the soil (oxygen-consuming fertilizing the soil and vermicomposting) and squander-to-energy (WTE) (burning, pelletization, bio methanation). WTE projects for the removal of MSW are a generally new idea in India. Albeit these have been attempted and tried in created nations with positive outcomes, these are yet to make headway in India to a great extent on account of the way that monetary reasonability and maintainability are as yet being tried. Various techniques for the removal

furthermore, treatment of MSW has been examined in the ensuing segments.

Refuse Derived Fuel: RDF alludes to the isolated high calorific part of prepared MSW. RDF can be characterized as the eventual outcome from squandering materials that have been handled to satisfy the rule, administrative or industry particulars essentially to accomplish a high calorific worth to be helpful as optional/substitute energizes in the strong fuel industry. The main property of RDF is that, in contrast to coal, it tends to be inferred and fabricated and thus is inexhaustible. RDF is primarily utilized as a substitute for coal (a petroleum product) in high-energy mechanical measures like force creation, concrete furnaces, and steel fabrication.

STRATEGY	&	FRAMEWORK	FOR	MSW
----------	---	-----------	-----	-----

The executives of waste might be characterized as the control of age, stockpiling, assortment, move and transport, handling and removal of strong squanders dependent on logical standards. There are various ideas about squandering the executives that differ in their use between nations or areas. Probably the broadest and generally utilized idea.

General Approach and Strategy

It ought to be more centered around decentralized waste administration however much as could be expected. The biodegradable squanders can be gathered and handled locally at the actual source. Evaluating waste age as indicated by the season is a significant precondition for framework arranging. Specialists need to consider specific systems for various waste generators and proper measures for the various levels in the SWM chain. Decentralized waste administration will assist with decreasing the transportation of squanders, lessen the quantum of squanders arriving at the unified plant, and diminish the land necessities and different issues identified with the treatment of huge amounts in a solitary area.

Activity wise Strategy & Framework

Step 1:	Improve	Waste	Segregation	and	Storage	at	Source	
Step 2:				Primary			Collection	
Step 3:				Street			Sweeping	
Step 4:	Set Up	Secondary	Waste	Storage	Depots	and	Transfer	Stations
Step 5:		Improve		Transport		of		Waste
Step 6:		Establish	Treatment	and		Recycling		Options
Step 7: Final Disposal by Constructing Sanitary Engineered Landfills								

MSW Scenario Of Class-II Cities

The quality and measure of MSW produced by a specific city moves according to their financial status, populace and business exercises, and so on. Arranging, activity, and planning of MSWM should be possible based on synthesis and the amount of MSW created. Class-II urban communities squander contains more natural material and less perilous material. Class-II urban communities create on a normal 3991 MT/day of MSW. Numerous experts say that the MSW age rates in humble communities are lower than those of metro urban areas, and the per capita age pace of MSW in India goes from 0.2 to 0.5 kg/day. The synthesis of MSW from medium and limited scope towns contains biodegradable waste (50 – 65 %) and non-biodegradable waste (35 – 50 %). This shows that there is higher biodegradable waste in class-II urban communities. MSW of these towns contains around 11% paper and cardboard, 40% natural waste, 34% non-biodegradable, and 14% plastic waste in Gujarat state. Most class-II towns don't have explicit methods of assortment, transportation, and removal. A portion of these towns is making depots for halfway isolation of the strong waste. The trash is by and large unloaded and consumed straightforwardly. Waste administration is given a low need and spending plan, which settles on the dynamic cycle slow. It has become more troublesome because of an absence of attention to the rules; natural worries with lacking assets have caused a tumultuous circumstance. It is alluring to advance an appropriate technique to manage MSWM of class-II towns.

REFERENCES

- 1) https://www.researchgate.net/publication/257715916_City_Based_Analysis_of_MSW_to_Energy_Generation_in_India_Calculation_of_State-Wise_Potential_and_Tariff_Comparison_with_EU
- 2) <https://www.sciencedirect.com/science/article/pii/S0956053X08001529>
- 3) https://www.academia.edu/5362295/Assessment_of_the_status_of_municipal_solid_waste_management_in_metro_cities_state_capitals_class_I_cities_and_class_II_towns_in_India_An_insight
- 4) https://www.researchgate.net/publication/6394075_Municipal_solid_waste_management_in_Indian_cities_-_A_review