

# Review on Plastic Waste Management at Mira-Bhayander Twin City

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**ABSTRACT:** The brief objectives of this paper are to review the present practices of the plastic waste management taken in Mira-Bhayander twin city by MBMC to scale back plastic waste and to seek out out any scope for improvement within the management and to deal with recommendations or suggestions for waste management.

**KEYWORDS:** MBMC, Mira-Bhayander Twin City, Plastic Waste Management, Waste to Energy.

## I. INTRODUCTION

Plastic is important a part of our life due to daily use and is produced at an outsized scale. As a result, it's a high range of applications in packaging, wrapping materials, shopping and garbage bags, etc. The Plastic waste either finishes up in landfills or ends up in water resources.

Primarily, plastic is recyclable, but recycled products are more harmful to the environment as they contain harmful additives and colours. The recycling Process can recycle virgin plastic material 2-3 times only because, after every recycling, the plastic material deteriorates thanks to combustion, and its lifetime gets decreased. Therefore, recycling plastic isn't a permanent solution. Furthermore, the disposal of plastic waste may be a serious concern thanks to improper collection and segregation systems.

### Plastic Waste Generation in India

In the Year 2017-18, According to Central Pollution Control Board (CPCB) reports, India generates nearly 9.4 million tonnes of plastic waste per year. However, approximately 5.6 million tons of plastic waste is recycled, and 3.8 Million tonnes of plastic waste are left uncollected or littered per year<sup>[2]</sup>.

There is a constant rise in plastic consumption and plastic waste generation per year. One of the critical problems for rising plastic waste is that discarded waste. Growing Plastic Waste also

adds to a rise in the carbon footprint since the plastic items increases the demand for plastic.

### Waste Management System in India

The Waste Management System Consists of various sorts of management techniques. the subsequent are commonest methods of Solid Waste and Plastic Waste Management most ordinarily practiced in India:

#### 1. Landfill:

A landfill is the most common type of waste disposal system and is widely used by municipal corporations in India to dispose of MSW. Dumping ground in Deonar, Mumbai, is Asia's largest landfill site in India.

#### 2. Reduce, Recycle, Reuse and Recovery:



### Waste Management Cycle

It is the most popular and traditional technique used in India. This process deals with the considerable decline of landfills and the reuse of plastic waste.

#### 3. Composting:

Due to a lack of adequate space for landfills, biodegradable yard waste can decompose in a medium designed for the purpose. Biodegradable waste materials are used in this process. It is a biological process in which micro-

organisms, specifically fungi and bacteria, convert degradable organic waste into substances like hummus. This finished product is high in carbon, nitrogen and is environmentally friendly manure<sup>[10]</sup>.

#### 4. Pyrolysis:

Pyrolysis is a method of solid waste management; solid wastes are chemically treated and decomposed by heat without oxygen. It usually occurs under pressure and at high temperatures. The

## II. TYPES AND IDENTIFICATION OF PLASTICS

Plastics are classified as follows:

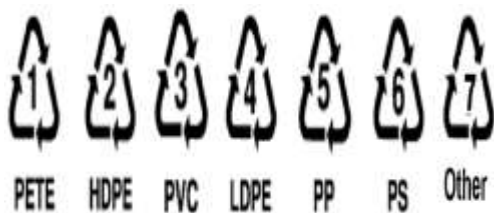
#### 1. Thermoplastics:

Plastics that can be given any shape.

#### 2. Thermosets:

It is a type of plastic that strengthens on heating but cannot be re-molded or recycled.

The Society of the Plastics Industry, Inc. introduced the coding system to identify plastic in 1988.



### Coding for Identification of type of plastic



### Examples of Plastic Waste

The seven various types of plastic are:

1. Polyethylene Terephthalate (PETE or PET):  
PET is also known as a wrinkle-free plastic.

2. High-Density Polyethylene (HDPE):  
HDPE is used in a grocery bag, opaque milk containers. It is recyclable.

solid wastes are changed into gasses, solid residue of carbon and ash, and small quantities of liquid<sup>[11]</sup>.

#### 5. Incineration:

The incineration method involves burning solid wastes at high temperatures until the scraps are turned into ashes. Incinerators are designed so that they do not give off extreme amounts of heat during combustion<sup>[10]</sup>.

#### 3. Polyvinyl Chloride (PVC):

PVC is a kind of plastic with vast application in electrical wiring, toys, etc. PVC is most toxic plastic.

#### 4. Low-Density Polyethylene (LDPE):

LDPE is used for plastic wraps, coatings for paper milk cartons and cups, squeezable bottles, food storage containers, and container lids.

#### 5. Polypropylene (PP):

PP is used in food packaging purposes, it is safe and non-recyclable.

#### 6. Polystyrene or Styrofoam (PS):

Polystyrene is used for egg cartons, disposable cups, etc.

#### 7. Others / Miscellaneous plastics.

## III. DATA COLLECTION

Data is derived from the City development report of Mira-BhayanderMahanagar Corporation (MBMC). It is measured in terms of metric tons for a day. Part of the data is also taken from Maharashtra Pollution Control Board Annual Report Year 2019.

- Location - MIRA BHAYANDER
- Municipal Corporation - MBMC
- Population - 814000 (According to Census Year 2011.)
- MSW Generation Per Day - 500 MT
- MSW Treated Per Day - 300 MT
- Plastic Waste Generated Per Day - 55.10 MT
- Existing MSW Processing Facility - COMPOSTING (REFUSE DERIVED FUEL.)

### Sources of Plastic Waste

Individuals, households, hospitals, and commercial shops are the largest sources of plastic waste in the region. We have estimated the plastic waste in Mira-Bhayander City.

Plastic waste in municipal corporations

consists of households, academic institutions, industry, commercial shops, hospitals, hotels, and welfare institutions. Mira-Bhayander adds up to

4.51% of total plastic waste Generation in Mumbai Metropolitan Region.

Sources	Plastic Waste Generated in Metric Ton	Plastic Waste Generated in %	Sources
Households	35.04	63.59	Households
Industry	8.76	15.90	Industry
Shops	1.05	1.90	Shops
Hotels & Restaraunts	4.94	8.96	Hotels & Restaraunts
Theaters	1.34	2.43	Theaters
Academic Institutions	1.9	3.46	Academic Institutions

#### IV. APPLICATIONS OF INCINERATION IN DIFFERENT CITIES IN INDIA

1. Okhla Municipal Solid Waste Management project uses combustion to generate 16MW of power from waste; the incineration plant can withstand anything between 6000 and 8000 tonnes per day.
2. Incineration plant at the Ghazipur dumpsite, Delhi.
3. India's largest Incineration plant at Narela-Bawana in March 2017.
4. Incineration Plant at Jabalpur started in May 2016. It has daily capacity of 600 tons.

#### V. DIFFERENT WAYS TO MINIMIZE PLASTIC WASTE

There are many different ways to minimize plastic waste; some of them are mentioned below:

1. Recycle of Plastic Waste.
  2. Creating Public Awareness Programs regarding the segregation of waste.
  3. Replacing Plastic Bottle with Steel Bottles.
  4. Using Biodegradable products such as Jute-made Carrying Bags, etc.
  5. Using Reusable Plastic Container.
  6. Avoid the use of disposable plastic material.
  7. Avoid plastic packaging.
- Support a plastic bag tax or ban.

#### VI. CONCLUSION

With the rise in Population in Urban areas like Mira Bhayander, there is a significant rise in

plastic consumption by individuals and the community as a whole. However, the current practices taken by Municipal corporation in plastic waste management seems to less effective. Therefore, we must take concrete steps to curb the problem of rising plastic waste.

We suggest the following steps be undertaken for the reduction of plastic waste.

1. Proper Segregation and Sorting of Waste at the source.
2. Creating Public Awareness programs.
3. Strict Plastic Ban.
4. Adoption of advanced, scientific methods of Plastic waste disposal, such as incineration.

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