

# Waste disposal easier as segregation centres started in all 24 wards

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**MUMBAI:** The Brihanmumbai Municipal Corporation (BMC) has finally set up waste segregation centres in all wards across the city to dispose of dry and wet waste. Along with this, it has, after much delay, appointed contractors to purchase 48 new vehicles for collecting dry waste.

Early this year, the civic body had installed nearly 5,000 bins across the city so that dry and wet waste could be disposed of separately.

For a while now, the civic body has been issuing notices to housing societies to segregate waste at home or be penalised. However, citizens resented the notices, claiming that even if waste is segregated at home, the civic body does not have a system to transport the two kinds of waste separately which effectively means that they are dumped together.

"We had to purchase the vehicles so that dry waste is collected separately. Each ward will now have two such vehicles," said Mohan Adtani, additional

## CONDITIONS

- The BMC has to achieve 100% house-to-house collection by March 15, failing which it will be ineligible to receive funds under the Jawaharlal Nehru National Renewal Mission (JNNURM).
- The conditions also include 100% segregation by 2015.

municipal commissioner.

Moreover, there was a lack of sorting centres in the city to carry out the segregation work. Last week, Adtani, municipal commissioner Sitaram Kunte and officials from the solid waste management department visited one of the centres in Dharavi to ensure that slum dwellers were aware of the importance of waste segregation.

"This will also ensure that the dumping ground is less burdened as dry waste can be directly sent to the recycling treatment plants," said Prakash Patil, deputy municipal commissioner, solid waste management.

## SEGREGATION OF WASTE AT SOURCE

ICPE, in association with Brihanmumbai Municipal Corporation and with the help of NGOs has been engaged in Segregation of Waste at Source Project in model Wards of Mumbai since 2001-2002. About 100 waste pickers in six model projects had collected more than 2000 MTs of dry waste from the source and earned more than Rs.1 crore in the year collectively.

ICPE had been insisting the BMC authorities to implement the waste collection and segregation system in the entire 24 Wards of the city. This would definitely yield the expected result of reducing the load on the city landfills and also provide livelihood to the hundreds of waste pickers in the city.

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# Initiatives Taken By ICPE on Plastics Recycling & Waste Management Experience In Select Mumbai Wards

## Eco-Sensitive Hill Station - Matheran

*Abstracts of the recommendations made by the Asim Burman Committee constituted by the Hon'ble. Supreme Court of India, in 1999 to look into all aspects in class I cities after a PIL was filed seeking direction from the Supreme Court to the Urban Local bodies as well as the Government of India and State Governments in the country for improving Solid Waste Management practices expeditiously.*

### Waste Management

#### Segregation of recyclable waste at source

In all parts of the country, people by and large do salvage reusable or saleable material from waste and sell it for a price, e.g. newspaper, glass bottles, empty tins, plastic bags, old clothes etc., and to that extent such reusable / recyclable waste material is not thrown out for disposal. However, a lot of recyclable dry waste such as waste paper, plastic, broken glass, metal, packaging material etc., is not segregated and is thrown on the streets along with domestic / trade / institutional waste. Such waste is picked up to some extent by poor rag picker for their livelihood. At times they empty the dustbins and spread the contents around for effective sorting and collection. By throwing such recyclable material on the streets or into a common dustbin, the quality of recyclable material deteriorates as it gets soiled by wet waste, which often contains contaminated and hazardous wastes.

Households and establishments, who throw such waste on the streets or in the municipal bins unsegregated, thus not seriously practise segregation of recyclable waste at source. At least 15% of the total waste can conveniently be segregated at source for recycling, which is being thrown on the streets in absence of the practice of segregation of waste at source. Part of this waste is picked up by rag-pickers in a soiled condition and sold to middle men at a low price, who in turn pass on the material to the recycling industry at a higher price after cleaning or segregation and the waste that remains uncollected finds its way to the dumping grounds.

#### "Land filling" practices.

By and large, crude dumping of waste is done in the country without following the principles of sanitary land filling. As negligible segregation of waste at source takes place, all waste including hospital infectious waste generally finds its way to the disposal site. Quite often industrial hazardous waste is also deposited at dump sites meant for domestic waste.

The waste deposited at the dumpsite is generally neither spread nor compacted on a regular basis. It is also not covered with inert material. Thus, very unhygienic conditions prevail on the dumpsites

#### Segregation of recyclable waste

It is essential to save the recyclable waste material from going to the waste processing and disposal sites and using up landfill space. Salvaging it at source for recycling could make profitable use of such material. This will save national resource and also save the cost and efforts to dispose of such waste. This can be done by forming a habit of keeping recyclable waste material separate from food waste and other bio-degradable wastes, in a separate bag or bin at the source of waste generation, by having a two-bin system for storage of waste at homes, shops and establishments where the domestic food waste (cooked and uncooked) goes into the Municipal system and recyclable waste can be handed over to the waste collectors (rag-pickers) at the doorstep.

#### Following measures may be taken by the local bodies towards the segregation of recyclable waste:

The local body may mobilize NGO's or co-operatives to take up the work of organizing street rag-pickers and convert them to door-step "waste collectors" by motivating them to stop picking up soiled and contaminated solid waste from the streets, bins or disposal sites and instead improve their lot by collecting recyclable clean material from the doorstep on daily basis. The local bodies may, considering the important role of rag pickers in reducing the waste and the cost to the local body in transportation of such waste, even consider extending financial help to NGO's and co-operatives in providing some tools and equipment to the rag pickers for efficient performance of their work in the informal sector.

The Local Bodies may actively associate resident associations, trade & industry associations, CBO's and NGO's in creating awareness among the people to segregate recyclable material at source and hand it over to a designated identified waste collector. The local body may give priority to the source segregation of recyclable waste by shops and establishments and later concentrate on segregation at the household level.

The upgraded rag pickers on becoming doorstep waste-collectors may be given an identity card by the NGO's organizing them so that they may have acceptability in society. The local body may notify such an arrangement made by the NGO's and advise the people to cooperate.

This arrangement could be made on "no payment on either side basis" or people may negotiate payment to such waste collectors for the doorstep service provided to sustain their efforts.



## ICPE Initiative

ICPE engaged itself to implement the recommendations of the committee, and associated itself with some NGO's and the local bodies in helping the collection, segregation and diverting the segregated dry waste to recycling process and thus stopping their way to the landfills. Experimental Waste Management System was initiated at some wards of Mumbai following the above guideline.

## Waste Management System at Brihanmumbai Municipal Corporation:

In Mumbai, constant effort is being made to separate the Dry and Wet waste at the source itself, so that the Dry wastes could be further segregated into different types of wastes and could be sent for recycling, resulting in lesser load to the landfill, sites.

There is an increasing activity among various Local Self Government Councils to treat the wet waste also through vermiculture or similar process, to generate compost, which can be used as fertilizers.

ICPE along with some NGO's have joined hands with BMC in some Wards of Mumbai to propagate the Proper Solid Waste Management culture among the citizens.

Though it is an uphill task, at least in some areas of different wards, (like in 'A' and 'D' Wards) of Mumbai, the results are evident.

Here is a brief description of the work being practised:

### 'A' – Ward (Cuff Parade Area):

1. BMC has given a secured area and a shed for segregation of dry waste.
2. BMC has also provided 2 nos. 1-tonner vans with drivers, free of cost, to move in the locality for 8 hours to collect dry wastes from households.
3. BMC has given Identity badges to the rag pickers who have been identified by the NGO's.
4. Some rag pickers accompany the BMC vans and collect dry wastes from doorsteps of the households/society buildings and bring those to the BMC allotted sheds for segregation.
5. The dry wastes are product-wise segregated into: paper, plastics, metal and others. Obviously, within each product, there are different categories e.g. in metal, there would be iron, aluminium foil etc. In plastics, there would be PE, PP films, polystyrene cups, HDPE solid items / caps etc.
6. These segregated dry wastes are stored in the secured sheds for disposal.

7. When sufficient quantity of scrap is accumulated, scrap dealers come to these sheds, weigh the scraps and pay the rag pickers / co-coordinator the cost of the scraps, and collect the dry waste. Generally, this collection takes place once in a week. (In some places, where the sheds are not well secured, rag pickers dispose off their segregated wastes every alternate day, or even daily to the recycles / traders)
8. The wet wastes are collected by separate BMC vans from the household localities – directly to the landfills.



pickers with Van



Waste at housing colonies



Waste being carried for loading into Municipality Van



ding of Dry Waste in Municipality Vans



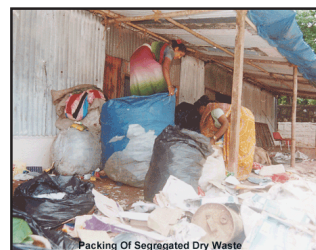
municipality Van with Dry Waste on way to segregation area



regation of Dry Waste



other view of Dry Waste segregation



Packing Of Segregated Dry Waste



Storage of Segregated Dry Waste in a secured place



Segregated Dry Waste being weighed and sold to recyclers / traders



In some societies, local self-government council or the societies themselves are collecting the wet wastes also for composting, resulting into zero garbage concept. However, this is not yet widely practised in general.

ICPE has provided collection bins, hand gloves, aprons, masks, etc. to the rag pickers, and promotional literature to the society members. ICPE also interacted with BMC, NGO's and others for co-ordination of the activities apart from providing training to rag pickers and conducting awareness programmes to the general public, school children, members of the housing societies etc. ICPE provided dedicated co-coordinators to the NGO's for effective monitoring of the pilot projects in the initial stage.

BMC as well as the concerned localities are happy with the activities carried out at 'A' and 'D' Ward. Activity has now been extended to some other wards also. The NGO's, which are closely working with ICPE in, these projects are: Stree Mukti Sanghatana, NAGAR, and FORCE etc.

## Segregation of Dry Waste at Source Model Projects in select Wards in Mumbai

Weight (Kgs)	Value (in ₹)	Weight (Kgs)	Value (in ₹)
<b>2004</b>  		<b>2005</b>  	
<b>2006</b>  		<b>2007</b>  	
<b>2008</b>  		<b>2009</b>  	
<b>2010</b>  		<b>2011</b>  	

In 2011 more than 1400 MTs Dry Waste was collected from the source of waste generation and

Rs. 83, 06, 910.00 were earned by about 100 waste pickers, each waste picker's monthly earning being about Rs. 7000/.

Similar Models are in Place in Some Other Parts of the Country in Isolation and **Not as a General Practice** despite Government Regulations Being in Force.

## Plastics Recycling Process



## Cleaning



## Drying



## Eglomeration



## Extrusion

## The Model of Dry Waste Management of Cuff Parade ('A' Ward), Mumbai Was Partially Replicated At Matheran, A Small Hill Station Situated At About 150 Km From Mumbai, Also.

Matheran, a popular hill station located in the State of Maharashtra, is the smallest hill station of India with an area of about 7.25 sq. kms and local population of approx. 4,500. The annual number of tourists is approx 2,50,000. Around 63% of Matheran is Reserve Forest and the bungalow plots are largely forested. The climax forests support a variety of species of flora and are also home to a number of endangered species. This ecosystem is extremely sensitive and given the area and other factors, even small amounts of pressure on the ecology and environment have enormous pressure on it. The Supreme Court declared Matheran as eco-sensitive and the Ministry of Environment and Forests issued a draft notification on 6 February 2002 declaring Matheran and surrounding areas as eco-sensitive.

### **Course of Action:**

One of the main problems of Matheran was the disposal of solid wastes, almost entirely comprising of PET bottles and laminates, which were thrown into the forests. ICPE took up the initiative of presenting a solution to their waste management problems and decided to provide help, assistance and expertise to Matheran. Members from ICPE addressed the Municipal Councilors on Solid Waste Management and Plastics and the Environment, which had a tremendous impact on them. The broad plan of action was then laid down - the representative of hotelier's association assured that all hotels would separate the plastic wastes, the Council would have separate bins for plastics and would conduct meetings with the local residents to garner their support and participation. The Council also agreed to set aside a plot where all the dry waste collected would be stored. ICPE took up the responsibility of taking it away from there. It was decided to approach the railways to transport the plastic waste to Neral in the freight trains that otherwise went back empty. It was found that Parle products sold the most at Matheran. Figures were obtained from Parle Bisleri and they quoted that the average number of PET bottles supplied to Matheran was 20,000-25,000 per month. The weight of empty bottles was stated as 1- 1 ½ tons every month. The weight of laminates was found to be approx 500 kgs per month.

A small committee was then formed to tackle the Solid Waste Management issues of Matheran – authorities from Matheran Bachao Samiti (MBS), ICPE, MCGM and Bisleri. A series of meetings were held in the Municipal Council office of Matheran to address the Councilors, hoteliers, shop owners and the local people.

ICPE made a visit to Matheran jointly with MBS, MCGM authorities and Bisleri in August 2002. It was seen that all the material that went up the hill (bottled water, packaged foodstuff etc.) was not brought down. Owing to the lack of sufficient number of garbage bins PET bottles, laminates and other dry wastes were littered along the railway tracks and all over the hill (market area, tourist points etc.).

Hoteliers dumped their dry wastes in their backyards.

During the meeting with the Councilors, a broad overview was given about ICPE and its segregation projects. The model Cuffe parade project was also described. Leaflets, giving details of the segregation process and the proper disposal of plastics, were distributed. MCGM authorities provided details of vermiculture and Advanced Locality Management (ALM).

It was then proposed that the Council members make a visit to Mumbai to study the segregation projects and the SWM methods of MCGM for the proper implementation of the Waste Management Project at Matheran.

It was also proposed that awareness activities be conducted in the schools and among the local people for better understanding of the project.

Thus Matheran cleaning project started with the help of all involved.

A review was taken in October 2002, and it was then seen that there was a remarkable improvement in the dry waste management of Matheran. The roads and market area were found to be litter free. The civic sense of the local people had improved. Dry waste was collected by the Municipal Council from all over the hill and brought to a central location. The Council had taken up a contract for the collection and storage of dry waste.

However, a need was felt for a proper system of disposal of dry waste to be jointly worked out by the Municipal Council, hotel, association, shop owners and the local people with the initial help and guidance of ICPE. Some practical measures were taken for easy handling of the dry wastes, especially the PET bottles, which are light in weight but high in volume. M/s. Bisleri installed compactor Machines, which crushes the PET bottles to a thin layer of sheet.

M/s. Bisleri had organized their own collection system to take back crushed PET bottles to nearby centers for recycling.

ICPE organized other recyclers / traders to take back Plastics and other wastes, for recycling. Further efforts were made for handling the wet (biodegradable) wastes for converting those to compost through vermiculture process.

The larger hotels were advised to have their own vermiculture pits, whereas the smaller hotels could send their wet wastes to some common compost bins.

In November 2002, the Expert Committee on New and Proposed Eco Sensitive Zones constituted by the Ministry of Environment and Forests visited the Eco-Sensitive Zone of Matheran. After the visit, the Chairman of the Committee, Prof. (Dr.) HY Mohan Ram, stated that the hill station of Matheran was clean and free of garbage.

He said that he had seen all the hill station in India, and no other hill station was as clean of garbage as Matheran.





# ICPE and Industry Initiative at Matheran



## **Dry Waste Segregation Data: 2003**

	<b>Weight – MT*</b>	<b>Value - Rs</b>
<b>Plastics</b>	698	4566463
<b>Non-Plastics</b>	1306	6827709
<b>TOTAL</b>	<b>2004</b>	<b>11394172</b>

**Select Project Areas under Wards: A; D; F-North; M; S; T**  
**Total Number of Waste Pickers – about 100**

\*MT = METRIC TON