

World Bank-aided Programme on “Environmental Management Capacity Building Technical Assistance Project” and Sponsored by Ministry of Environment and Forests, Government of India.



Ragpickers with van

ICPE on Plastics Recycling & Waste Management – Experience in Mumbai Wards and Eco-Sensitive Hill Station, Matheran

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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 pickers 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 unsegre-

gated, thus do 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 dump site 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 dump sites.

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 mate-



Dry waste at housing colonies

rial. 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.

The following measures may be taken by the local bodies towards the segregation of recyclable waste:

The local bodies may mobilize NGOs or co-operatives to take up the work of organizing street rag-pickers and convert them to doorstep “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



Dry waste being carried for loading into Municipality van

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 NGOs 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, CBOs and NGOs 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.



Loading of dry waste in Municipality van

The upgraded rag pickers on becoming doorstep waste-collectors may be given an identity card by the NGOs organizing them, so that they may have acceptability in society. The local body may notify such an arrangement made by the NGOs 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.

(Based on the recommendations made by the Committee constituted by the Hon’ble. Supreme Court of India, in 1999.)



Municipality van with dry waste on way to segregation area

ICPE Initiative:

ICPE engaged itself to implement the recommendations of the committee, and associated itself with some NGOs 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 Brihan Mumbai 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 fertilizer.



Segregation of dry waste

ICPE along with some NGOs 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 (Cuffe 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-coordinators, 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 of their segregated wastes every alternate day, or even daily to the recyclers/traders).

8. The wet wastes are collected by separate BMC vans from the household localities – directly to the landfills.



Packing of segregated dry waste

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, NGOs and others for co-ordination of the activities apart from provid-



Storing of segregated dry waste in a secured place

ing 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 NGOs 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' Wards.

Activity has now been extended to some other wards also.

The NGOs which are closely working with ICPE in these projects are: Stree Mukti Sanghatana, NAGAR, and FORCE, etc.

The model of Dry Waste Management of Cuffe Parade ('A' Ward), Mumbai was followed at Matheran also.



Segregated dry waste being weighed and sold to recyclers / traders

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 impact on it. The Supreme Court declared Matheran as eco-sensitive and the Ministry of Environment and Forests issued a draft notification on 6th 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 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.



Initial condition – 2001

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 1-1.5 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



Initial practice

among the local people for better understanding of the project. Thus Matheran cleaning project started with the help of all involved.



Community Awareness Programme

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.



Awareness among school children

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 Machine, 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.



Demonstration of a PET bottle crushing unit by Bisleri at Matheran

The larger hotels were advised to have their own vermiculture pits,



Segregated garbage

whereas the smaller hotels could send their wet wastes to some common compost bins.

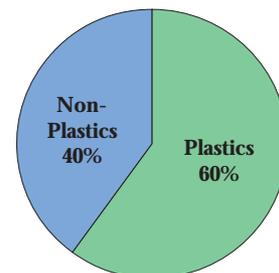
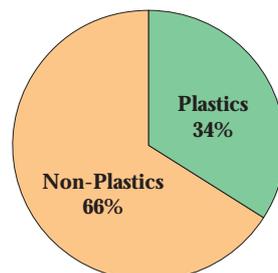
In November 2002, the Expert Committee on New and Proposed Eco Sensitive Zones constituted by the Ministry of Environment and Forests visited the Eco-Sensitive Zone of Matheran. After the visit, the Chairman of the Committee, Prof. Dr. H. Y. Mohan Ram, stated that the hill station of Matheran was clean and free of garbage. He said that he had seen all the hill stations in India, and no other hill station was as clean of garbage as Matheran.



Segregated garbage disposal

Waste Collection in the year 2003 – 4 Wards under Project: A, D, F (North) and S

Weight (kg)			Value Earned (Rs.)		
Plastics	Non-Plastics	Total	Plastics	Non-Plastics	Total
2,17,161	4,06,483	6,23,644	14,19,759	9,40,766	23,60,525



International News

UK's New Rubbish Dump: China

More than a third of waste paper and plastic collected by British local authorities, supermarkets and businesses for recycling is being sent 8,000 miles to China without any knowledge of the environmental or social costs – and to the complete surprise of most consumers.

New government figures suggest that exports to China are running at 200,000 tonnes of plastic rubbish and 500,000 tonnes of paper and cardboard a year – a huge increase on just three years ago.

Much of the plastic sent to China is packaging but it is found that Chinese companies are buying up and exporting thousands of tonnes of unwashed bottles, containers and household waste.

The British plastic industry admits that the global trade is starving some local recycling initiatives of materials and putting established firms out of business or at risk.

China drives the global waste trade, importing more than 3 m tonnes of waste plastic and 15 m tonnes of paper and board a year. But the trade is being driven equally by tough EU legislation forcing local authorities and businesses to recycle more. Landfill charges are rising steeply, making it relatively cheaper to send the waste abroad. Meanwhile, major companies have moved in, offering to collect and dispose of large quantities,

One of Britain's largest freight forwarding companies confirmed that

the return waste trade to China is accelerating rapidly. According to reliable sources it is learnt that this company is shipping phenomenal amount of waste, may be 15,000 tonnes a week to China. An official of Greenpeace China said that Britain is dumping its rubbish in the name of recycling. It is not, responsible recycling, it is reprocessing, but the methods mostly used are still rudimentary. There are some good factories. But on the whole it is small scale, done in backstreets with little environmental standards.

There is a legitimate trade in waste exports for recovery involving materials such as paper, ferrous metals, plastics and card. These wastes are classified as 'green list' and are not subject to the same level of control of wastes classified as hazardous.

Source: *The Guardian Review*

Pilot Project 'Waste to Wealth' Programme in Ward No. 82, KMC, Kolkata

On 8th August 2004, Shri Subroto Mukherjee, Mayor, Kolkata Municipal Corporation (KMC) inaugurated 'Waste to Wealth' pilot project in ward No. 82 in Chetla area of KMC.

This project is implemented by IPF jointly with Kolkata Municipal Corporation, West Bengal Pollution Control Board, Indian Centre for Plastics in the Environment and others.

In the first phase 6 roads of Ward No. 82 have been identified for the project. To generate awareness in people, messages regarding the project have been beamed on local TV channels and public announcements were made. Every Household was given an eco-friendly and recyclable bag to store the plastic wastes, making the collection easier. Employing the jobless youths for collection of plastic wastes is the other positive fallout of the scheme. They will purchase the plastic waste @ Rs. 4/-



per kg and sell them to recyclers at a profit of at least Rs. 2/- or more.

The recycled by-product will be manufactured by adopting an eco-friendly process. The recycled products include household items like buckets, doors and even shoes – all of which will be available to the consumers at half the price of similar products.

A cycle van has been provided to facilitate easy collection.

The programme will continue for three months. On the success of this pilot project, the same would be replicated. In other areas of KMC and other municipalities of a West Bengal. This launch programme has been well reported both in the print and electronic media.

Seminar on *Plastic Wastes in Road Construction and Bin Culture*

A Seminar was organised by Indian Plastics Federation (IPF), Kolkata, in association with Indian Centre for Plastics in the environment (ICPE) Mumbai and Plastindia Foundation, Mumbai, at Sripati Singhania Hall, Rotary Sadan, Kolkata on 20th August, 2004 from 2.30 p.m. to 5.30 p.m. A presentation was made by Shri Vijay Merchant, Chairman-Environment Committee, Plastindia Foundation, Mumbai on 'BIN CULTURE.' Another presentation on PLASTIC WASTES IN ROAD CONSTRUCTION' was made by Dr. R. Vasudevan, Prof. and Head,

Dept. of Chemistry, Thiagarajar College of Engg., Madurai. Both the presentations were followed by a discussion. Prior to the presentation, a prize distribution ceremony to school students was held for the Poster Art Contest on 'It's My World - Imagination for a Cleaner Environment' that was organized by Indian Centre for Plastics in the Environment (ICPE), Mumbai in October-December 2003.

Shri Tapan Mitra, Member - State Planning Board, Government of West Bengal, was the Chief Guest who handed over the prizes to the

students and representatives of different schools.

The Seminar was well attended with representatives of Municipalities, PWD, CPWD, NGOs and others. The Hon'ble Mayor of Howrah Municipal Corporation Shri Gopal Mukherjee also attended the Seminar. Shri J. C. Agarwal, President-IPF, Shri R. A. Lohia, Chairman - 'Plastics in Environment' Sub-Committee, Shri Amar Seth, Chairman of 'Seminar & Exhibition' Sub-Committee, Shri K. K. Seksaria, Hon. Secretary of the Federation along with other office bearers and Senior Executive Members were active to make the programme successful. The Seminar has been well reported in Print as well as Electronic media.



Presentation on Environmental Projects Undertaken by ICPE

**Hotel Tunga International, Andheri, Mumbai
- April 20, 2004**

In a Meeting organised by Organisation of Plastics Processors of India, Shri Vijay Merchant, Member -GC, ICPE, made a presentation on the Solid Waste Management Projects undertaken by ICPE at Matheran and other selected Wards of Mumbai.

Besides OPPI Members, the Meeting was attended by some NGO's engaged in similar activities.

Representatives of some NGOs agreed that they had a wrong perception about Plastics, which was removed after the meeting.

Training Programme on Environmental Law in India - Rules and Regulations

**Organised by Engineering Staff College of India
at Hyderabad - 25-27 June, 2004**

ICPE attended the programme where more than 40 organisations and Government departments participated.

All the relevant Environmental Laws in India - related to Plastics and Solid Waste Management were selected from the publication and uploaded in ICPE website for ready reference.



Group photograph of Envis Nodes Coordinators across the country. Also seen in the picture are senior level officials of MoEF: ❶ Mr. Sudhir Mital, Jt. Secretary; ❷ Mrs. Meena Gupta, Addl. Secretary; ❸ Mr. S. Singait, Director, WII; ❹ Dr. (Mrs.) Indrani Chandrashekharan, Director (EI).

National Workshop of ENVIS Centres and Nodes

Organized by Ministry of Environment and Forests at Dehradun – 25-27 June, 2004

ICPE participated in the 3-Day-National Workshop, attended by about 70 of the 85 ENVIS Centres and Nodes of all over country selected by the Ministry to act as nodal points of Environment Information System in different fields. The Workshop was held at Wildlife Institute of India, Dehradun.

The World Bank Assisted Programme on “Environmental Management Capacity Building Technical Assistance (EMCBTA)” was scheduled for the period July 01, 2002 to June 30, 2004. MoEF has decided to fund some of the Centres/Nodes so that the Environmental Information System is continued for the benefit of the country. ICPE has been selected as one of such Centres/Nodes, which will receive the fund from the Ministry.

During the course of the Workshop, relevant queries on the position of Plastics in the Environment were replied. The issues were:

1. PVC and Dioxin
2. Phthalate Plasticizers and Cancer
3. The real reason of various State Governments’ banning the use of Polyethylene Carry Bags less than 40 micron or in the case of H.P., less than 70 micron thickness.

www.envis-icpe.com

Website hits for the months July-September 2004

Months	Hits
July	: 11,794
August	: 13,560
September	: 14,180



Indian Centre for Plastics in the Environment

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