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Waste and Bio-Polymers, Impact of
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Editorial



ICPE has been bringing the facts about plastics and its position with respect to the environmental benefits derived when the material is used. Various publications of ICPE have focussed on clearing different myths about plastics. At the same time ICPE has been focussing on the main issue which is held against the usage of plastics – the issue of plastics waste. ICPE has been stressing on the importance of creating awareness against poor littering habit of general mass and improving the infrastructure for management of solid waste, which are the main reasons of waste management problem.

We find all types of dry waste including plastic waste littered in our surroundings. Even wet waste also is found littered around the street corners and elsewhere. The reality is that plastics waste form only about 5% – 8 % of the MSW stream in major Indian cities, balance about 90% being other types of waste including degradable, recyclable and inert waste. There is no problem of disposing the plastics waste. Plastics waste can be 100% recycled by one technology or the other. MoEF, Government of India had come up with Plastics Waste (Management and Handling) Rules, 2011 with clear direction on handling of plastics waste.

The real solution lies in the segregation of dry and wet solid waste at the source, creation of efficient solid waste management infrastructure coupled with establishment of recycling centres as plastics can be recycled to produce articles of non-critical applications for mass use augmenting the concept of resource management. This edition of ENVIS Eco-Echoes gives a brief outline on the MSW handling system as suggested by the Asim Burman Committee constituted by the Hon'ble. Supreme Court of India, in 1999 and the initiatives taken by ICPE and some NGOs in Mumbai with the support of Brihanmumbai Municipal Corporation in select Wards of Mumbai for the Collection of dry waste from the source of waste generation and Disposal of the same to Recyclers through waste dealers after proper segregation. This requires to be practised in the entire country.

Subscription Information:

ENVIS is sent free of cost to all those interested in the information on Plastics and Environment.

Readers are welcome to send their suggestions, contributions, articles, case studies, and new developments for publication in the Newsletter to the ICPE-ENVIS address.

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Editor

Mr. T. K. Bandopadhyay

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 re-usable 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 Initiatives (Contd.)

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.



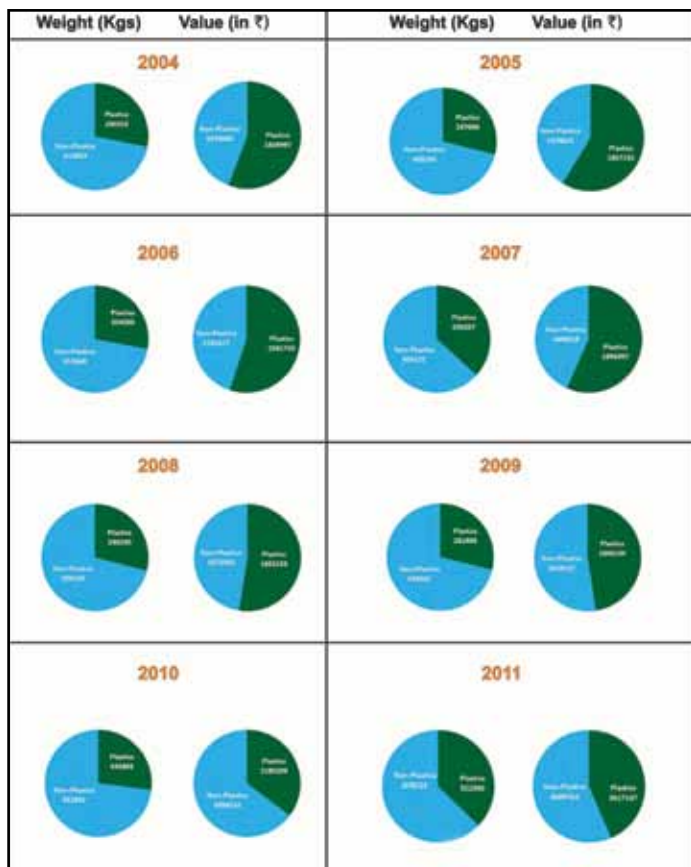
ICPE Initiatives (Contd.)

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



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 Partially Replicated at Matheran,

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- 1½ 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.) 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 station in India, and no other hill station was as clean of garbage as Matheran.

ICPE and Industry Initiative at Matheran



Awareness Programme in Delhi Schools October – December, 2012

Awareness Programmes continued to be conducted in schools for educating the students on responsibilities of each individual towards maintaining a clean and safe environment around us. Educating the students on Plastics - its benefits, issues and solutions forms an important part of such programme. During the period October to December, 2012, Awareness programmes were conducted in following schools:

- Shanti Gyan Niketan Sr. Secondary Public School, Goyla (Dwarka), Near Sector - 19, Delhi on November 20, 2013 attended by around 250 students of class VIII and 8 teachers:

- Ryan International School, Sector-25, Rohini, Delhi on 23rd November, 2013 attended by around 150 students of Class X and 4 teachers.

- Apeejay School, Saket, New Delhi on 27th December, 2012 attended by around 300 students of Class VII & Class VIII and 6 teachers.

Dr. A. N. Bhatt from ICPE accompanied by other ICPE officials - Sh G. K. Jha and Smt Geetha Murali, had conducted the programme which included screening Awareness Film and making a Power Point presentation.

The students also participated and spoke on the occasions. Most of the students were wondered "why the authorities were taking measures for banning such a useful material" instead of focusing on waste disposal! Students realised that banning of plastics was not a solution for plastic waste disposal.

ICPE's awareness booklets, It's My World was also distributed to all students. The other booklets, Point-Counterpoint & Frequently Asked Questions & ICPE's recent editions of Eco Echoes/ENVIS Newsletter (10 copies) were handed over to Teachers for keeping in the school library.



Shanti Gyan School



Ryan International & Apeejay School



Indplas 2012 Exhibition at Kolkata 05 - 08 th October, 2012

ICPE participated in the Exhibition Indplas 2012 organised by IPF and Plastindia Foundation which was held during October 05 to 08, 2012 at Science City, Kolkata. Open space of 180 sq. mts. was given to ICPE on which panels on plastics and the environment were displayed,

Awareness Films were screened and samples of recycled plastics products were demonstrated.

During inauguration function, CEO of Kolkata Metropolitan Development Authority in his speech informed the visitors of the Municipality's plan to implement the programme for using plastics waste in the construction of Asphalt Roads in the Metropolitan City.

ICPE's display panels had carried the issues on Plastics Waste Management and the solutions thereof, apart from describing the benefits of plastics. However footprints of school and college students were not significant.



Plasto 2012 Exhibition – Pune 20th - 23rd December, 2012

ICPE participated in the Exhibition Plasto 2012 organised by IPI Pune Chapter and Plastindia Foundation which was held during December 20 to 23rd at Auto Cluster Chinchwad, Pune.

Organisers of the Exhibition offered free stall of 9 sq. metres to ICPE during the Exhibition. ICPE Awareness Films were

screened and ICPE Officer was deputed to explain about 10 Display Panels on major issues and solutions to Plastics Waste Management.

The Exhibition was on a smaller scale. However, common people visited ICPE stall and many of them learned for the first time that plastics were environment friendly.



DATA SHEET

DRY WASTE SEGREGATION DATA OF SELECT WARDS OF MUMBAI-2012

Plastics	A Ward 11 nos. Rag Pickers		D Ward 60 Nos. Rag- pickers		F-North Ward 5 nos. Rag Pickers		M Ward (East -West) 16 nos. Rag Pickers		S Ward 3 nos. Rag Picker		T Ward		Total	Total
	Weight (Kgs)	Value (Rs.)	Weight (Kgs)	Value (Rs.)	Weight (Kgs)	Value (Rs.)	Weight (Kgs)	Value (Rs.)	Weight (Kgs)	Value (Rs.)	Weight (Kgs)	Value (Rs.)	Weight	Value
Jan -12	2713	32464	27030	204413	5115	47824	9768	68055	625	4733	534	5495	45785	362984
Feb-12	3190	31582	23475	141850	4538	36905	7832	53968	724	5492	839	8565	39330	278362
Mar-12	1922	28012	26209	169418	11185	75095	7212	56867	432	2786	1855	18550	48475	350728
Apr-12	1765	24012	25005	161085	2654	23149	8302	54486	92	625	794	7940	38612	271297
May-12	3434	30998	26209	169418	2943	31080	9431	67795	720	4949	747	7470	43484	311710
Jun-12	3410	30657	21385	146180	3971	45664	9385	68234	811	5551	448	4480	39410	300766
Jul-12	2190	28918	20173	77330	1504	11699	10098	66582	444	2641	2682	8204	37091	195374
Aug-12	2334	29364	24222	113114	1242	9492	8774	72509	773	5887	3985	25132	41330	255498
Sep-12	2325	22488	24145	111590	1333	10195	8554	13291	13291	14340	12105	33534	61753	205438
Oct-12	2455	30689	25148	117226	1585	13285	9008	60748	2357	14892	4552	27474	45105	264314
Nov-12	2670	36961	23210	104820	1725	12620	11829	85137	2266	17974	4913	31852	46613	289364
Dec-12	3168	26340	25605	114620	1639	12410	9800	67531	2374	13941	6697	34488	77691	269330
Total Plastics	31576	352485	291816	1631064	39434	329418	109993	735203	24909	93811	40151	213184	564679	3355165

Non- Plastics	A Ward 11 nos. Rag Pickers		D Ward 60 Nos. Rag- pickers		F-North Ward 5 nos. Rag Pickers		M Ward (East -West) 16 nos. Rag Pickers		S Ward 3 nos. Rag Picker		T Ward		Total	Total
	Weight (Kgs)	Value (Rs.)	Weight (Kgs)	Value (Rs.)	Weight (Kgs)	Value (Rs.)	Weight (Kgs)	Value (Rs.)	Weight (Kgs)	Value (Rs.)	Weight (Kgs)	Value (Rs.)	Weight	Value
Jan -12	15993	63565	39844	400762	12891	47460	9935	33842	1053	4582	2405	3568	82121	553779
Feb-12	16586	34232	26016	255247	10659	42082	8649	28193	580	3150	2211	4170	63701	367074
Mar-12	11204	56513	28634	283447	12238	39922	6315	22901	780	1192	2221	3523	61392	407498
Apr-12	14139	46906	26966	262037	6136	19896	10669	26479	71	141	2261	4019	60242	359478
May-12	13516	48421	28634	283447	10947	43557	11503	21843	688	1160	2253	4003	67541	402431
Jun-12	13348	48136	30281	298009	10427	44746	21101	44304	5182	6814	2149	3457	82488	445466
Jul-12	14434	49204	20108	131790	7039	39074	14240	32045	869	869	2218	3564	58908	256546
Aug-12	9532	11642	32322	221585	7859	41015	11076	35653	1388	6370	10393	15086	72570	331351
Sep-12	15551	55421	29658	230040	5738	35787	10601	34290	8769	10375	7385	8020	77702	373933
Oct-12	18309	64332	30712	234339	4928	31492	10674	35073	9348	10988	17071	22056	91042	398280
Nov-12	11310	35477	28918	239030	7026	32411	15256	34750	12628	16643	14745	23850	89883	382161
Dec-12	11362	39924	31243	263484	5670	26710	13880	33122	9417	14208	7859	15423	79431	392871
Total Non Plastics	165284	553773	352336	3103217	101558	444152	143899	382495	50773	76492	73171	110739	887021	4670868
Grand Total	196860	906258	644152	4734281	140992	773570	253892	1117698	75682	170303	113322	323923	1451700	8026033

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