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PLASTICS WASTE GENERATION IN INDIA



National Evaluation - Cum - Interaction Workshop of all ENVIS CENTRES at DELHI From 17th to 19th February, 2016



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Area of Activity

**Capacity Enhancement Programme
on Management of Plastics, Polymer
Waste and Bio-Polymers, Impact of
Plastics on Eco-System**

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ICPE-ENVIS Co-ordinator

Mr. T. K. Bandopadhyay

Technical Director



Designed By

Mr. Sudheer Khurana

Sr. Programme Officer



Swachhta Pledge

SWACHHTA PLEDGE

Mahatma Gandhi dreamt of an India which was not only free but also clean and developed. Mahatma Gandhi secured freedom for Mother India. Now it is our duty to serve Mother India by keeping the country neat and clean.

I take this pledge that I will remain committed towards cleanliness and devote time towards this. I will devote 100 hours per year that is two hours per week to do voluntary work for cleanliness. I will neither litter nor let others litter. I will initiate the quest for cleanliness with myself, my family, my locality, my village and my workplace.

I believe that countries that appear clean are so because their citizens don't indulge in littering nor do they allow it to happen. With this firm belief, I will propagate the message of Swachh Bharat Mission in villages and towns.

I will encourage 100 other persons to take this pledge which I am taking today. I will make them devote their 100 hours of cleanliness.

I am confident that every step I take towards cleanliness will help in making my country clean.



Subscription Information:

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

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Editorial

Plastics Waste Management Rules, 2016

Ministry of Environment, Forests and Climate Change, Government of India has notified the Plastics Waste Management Rules, 2016 on 18th February, 2016. This has superseded the earlier Plastics Waste (Management and Handling) Rules, 2011: 4th February, 2011 as amended on 2nd July, 2011.

When we analyse the Rules, we observe that attempts have been made to reach out to the root cause of generation of plastics waste and to fix responsibility for the management of the waste on those responsible for creating the waste. Responsibility of waste generators as well as waste collectors have been defined and fixed. In Rule 2.1 states: “Rules will apply to Waste Generator, Local Body, Gram Panchayats, Manufacturer, Importer and Producer” New definitions have been included on “waste generator / institutional waste generator and brand owner. Carry bag definition gives better clarity. Definitions of Manufacturer and Producer have been modified. All these are expected to clear ambiguity on interpretations.

In one clause the Rule says: The local body for setting up of system for plastic waste management shall seek assistance of producers and such system shall be set up within one year from the date of final publication of these rules. In another section, the Rule directs: “All waste generators shall pay such user fee or charge as may be specified in the byelaws of the local bodies for plastic waste management such as waste collection or operation of the facility thereof, etc. These are important. However, in absence of mandatory and clear directive, it may be difficult to implement the spirit of the Rule.

In a practical approach, the Rule directs: Every person responsible for organising an event in open space, which involves service of food stuff in plastic or multilayered packaging shall segregate and manage the waste generated during such events in accordance with the Municipal Solid Waste (Management and Handling) Rules, 2000 or amendment from time to time. Here we find that cross reference of Solid Waste Management Rule has been made to make it comprehensive. Hence it is imperative that the Rule should hold good for the organisers of the event for the waste created by other types of disposable items other than plastics as well. Provision should be made in the Rule accordingly. The producers have been directed to work out modalities for waste collection system based on Extended Producers Responsibility and involving State Urban Development Departments, either individually or collectively, through their own distribution channel or through the local body concerned within a period of six months. Primary responsibility for collection of used multi-layered plastic sachet or pouches or packaging has been imposed on Producers, Importers and Brand Owners who introduce the products in the market. However there is lack of transparency on how these could be done especially by big National or Multinational Organisations who supply their products all over the country. There is doubt whether the clause on phasing out of multilayered plastics in two years’ time can be implemented due to technical reasons.

There is no clear directive for exempting Stretch and Cling Wrapping and Shrink Packaging – which are very important in effective packaging systems which save the environment in many ways.

This Rule encourages unrestricted use of carry bags made of compostable plastics. Consequences of this are:

- Uncontrolled spurious products would flood the market as testing of compostability is virtually impossible to implement in the market place. In Indian context where even measurement of thickness of film is found difficult, introducing this rule permitting use of compostable carry bags in open market would be detrimental.
- Compostable and normal films would be mixed up in waste stream and recycling activity would be in jeopardy.
- Instead – use of compostable plastics should be made mandatory for mulch film, nursery bags and similar applications.

There are reports that even some of the manufacturers who have nationwide marketing network, are finding it difficult to fill up the FORMS, which are required to be submitted within a specified time.

Considering all these the Ministry may like it appropriate to organise Awareness Workshops in different zones, like it was done during the drafting stage of the Rule, for clearing any ambiguity in understanding the same and its efficient implementation.

Editor

Mr. T. K. Bandopadhyay

PLASTICS WASTE GENERATION IN INDIA

No authentic census survey has been made in India so far to estimate the generation of plastics waste. In absence of any direct survey, an indirect yet logical estimation may be made on how much plastics waste the country generates, which remain in the municipal solid waste stream (MSW) unattended. The methodology consists of analysing the life span of different applications of plastics and by characterizing the waste reaching the landfills and by assessing the activities of waste pickers who picks up the waste plastics (and other recyclable dry waste) from the landfills for selling the same to the recyclers directly or through waste dealers.

In the first step plastics consumption figure in India for a particular year, say 2008-09, may be considered. Government of India, Ministry of Chemicals & Fertilizers, Department of Chemicals & Petrochemicals (DCPC) figure for plastics consumption in that year was 6.181 million tons. In this consumption figure, there are long to very long term applications such as Pipes and Fittings, Profiles, Wires & Cables, Automobile, Industrial applications, Home Appliances, Furniture, Household Rigid products like buckets, tubs, water tanks etc. These applications do not generate any waste in the short term. Out of the 6.181 million tons, more than 1.5 million tons were used for pipe applications, more than 0.5 million ton were used for wires & cable applications, 0.2 million tons were used for performance sector / engineering applications like gears, casings, tools etc.

These applications do not generate waste in the short term. Plastics goes for various other applications like household items - chairs, buckets, tubs, mugs etc. which are not discarded immediately or in short duration. These are used for a long time.

It is only part of the flexible packaging applications, which are discarded immediately after consuming the products. Even in the flexible packaging sector, thick plastic bags are used and reused for a long time. 0.6 million tons of polypropylene were used for making woven sacks, which, although falls under flexible packaging sector, are not discarded to the waste stream immediately. Rigid packaging materials like bottles, jerry cans, drums etc. are not discarded in the MSW stream. All rigid plastics waste except EPS (Expanded Polystyrene) are picked up at the source of waste generation and forwarded for recycling. In a report submitted by British Plastics Federation, the

consumption of plastics for packaging sector in India in 2009 was estimated at 24%. By taking same usage pattern for the previous year (2008) and by considering even 20% of it being consumed for flexible packaging, and also considering all of it being discarded in the same year, a figure of **1.24 million tons is estimated for plastics waste generation** (20% of 6.181=1.2362). It is also estimated that India recycles 60% of the waste that goes to MSW stream. Hence, **about 0.744 million tons plastics wastes were recycled and 0.496 million tons remained in the landfills.**

Several studies done by NEERI and other NGOs have estimated around 5 – 8% plastic waste in the MSW. In fact studies done by NGOs in Mumbai city, Delhi & Jhansi reveal that substantial quantity of plastics wastes are picked up from the land fill itself leaving behind only a negligible quantity, to the tune of about 1.5 % of MSW. Applying this analysis, it may be logically stated that **plastics waste remained in the landfill unattended (not recycled) in 2008 was less than 0.5 million tons.** Although in the recent years, consumption of plastics has gone up (9.182 million tons in 2013 – 14), however several new technologies also have been developed for feedstock recycling or energy recovery from plastics waste, which are abandoned by mechanical recyclers due to techno - commercial reasons.

Co-processing of all types of plastics waste in cement kilns is one such development. With effective waste collection mechanisms, India can reach a 100% plastics waste recycling / recovery figure in the near future.

Applying the above considerations and with available reports of CIPET and Plastindia Foundation, we may arrive at the following figures for plastics waste generation, collection (recycled) and the quantity remained uncollected in the years 2008 – 09 and 2013 – 14 as per following calculation:

In the Year 2008 – 09

Plastics consumption: 6.181 Mn Tons
Estimated plastics waste generation (flexible packaging): 1.24 Mn Tons
Plastics Waste recycled @ 60% (flexible packaging): 0.744 Mn Tons
Plastics waste remained



uncollected: 0.496 Mn Tons (1.24 – 0.744)

Total Recycling (from all sectors): 3.6 Mn Tons which included recycling of other types of plastics from other sources (CIPET report: 2008 – 09).

In the Year 2013 – 14:

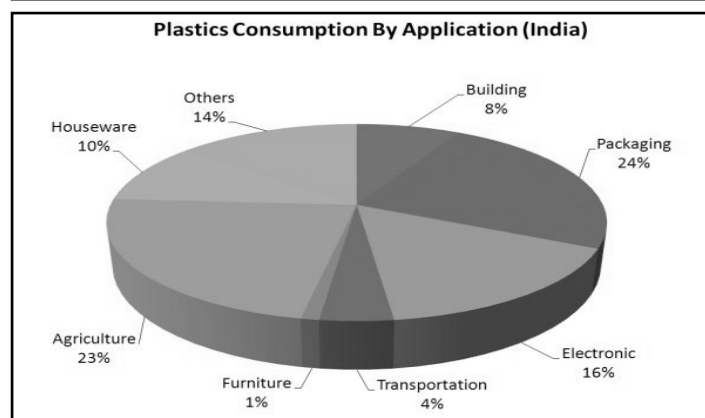
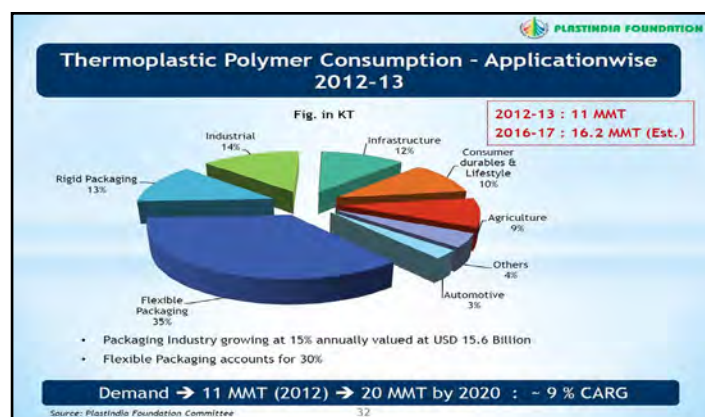
Plastics consumption: 9.182 Mn Tons Estimated plastics waste generation (flexible packaging): 3.2 Mn Tons (@35% consumption in flexible packaging sector) Plastics waste recycled @ 60%* (flexible packaging): 1.92 Mn Tons **Plastics waste remained uncollected: (3.2 – 1.92) = 1.28 Mn Tons**

Total Recycling (from all sectors): > 4.0 Mn Tons*.
*(Based on PLASTINDIA REPORT of previous year: 2012 – 13. Actual total recycling figure in 2013 – 14 is estimated to be more than 4.0 Mn Tons)

Data source: Published documents of DCPC, British Plastics Federation, CIPET, Plastindia Foundation and ICPE

NOTE

With regard to a report (not by ICPE / Plastics Industry) which considered that 70% of plastics consumption is converted as waste and estimated that 5.6 Million Tones of plastics waste was generated in the country (out of 8.0 Mn Tons of production in 2008), which equals to 15342 tons per day (TPD). The said report also concluded that considering 60% of plastics waste generated is recycled in India a quantum of about 6289 tons per day (remaining 40% or 2.3 Mn Tons) remain unattended. This assumption is surely not appearing to be correct. For instance PVC, which is one of the major Polymers (plastic) used in the country, is mainly used for making pipes, windows, door profile, wires & cables etc, which are for long term use and are not



discarded as waste immediately (in the same year). The country consumed 1.4 million tons of PVC for the above applications in that year. Similarly, 0.2 million tons plastics was used as performance plastics which were used mainly in production of washing machines, automobile parts etc. which are not discarded in the same year. About 0.6 million ton of Polypropylene (PP) used for production of woven sacks, was not discarded immediately as waste. Buckets made of HDPE are used for several years by households. Total of 10% or 0.8 Mn ton was consumed by House ware sector. Surely, the said report cannot be considered as truly reflecting the ground reality.



Plastics waste of same category can be washed and made ready for mechanical recycling

ICPE PARTICIPATION IN PLEXPO-2016 at GANDHINAGAR, GUJARAT From 05th to 12th JANUARY, 2016

As a part of awareness programme, ICPE Envis Centre had participated in an Industrial Exhibition: Plexpo -2016 organised by Gujarat State Plastics Manufacturers' Association (GSPMA) at Gandhinagar, Gujarat from 07th to 11th Jan-2016. Benefits of Plastics, various Issues and Solutions through effective Source Segregation of Dry Waste including Plastics Waste and Recycling / Recovery of the same in a scientific and environmentally friendly manner were depicted with the help of Display Panels and samples of recycled products. Awareness Films were screened within the Stall continuously. Easy to understand printed leaflets on source segregation of plastics and other dry waste were distributed among the visitors including school students. Shri Nitin Bhai Patel Minister for Health, Medical Education, Family Welfare etc, Gujarat visited ICPE ENVIS Campaign and appreciated the Awareness Campaign at Plexpo - 2016 Exhibition. Shri Rajiv Raval and other office bearers of GSPMA and Office Bearers of other Plastics Associations had visited ICPE Stall. The Stall was provided by GSPMA free of cost. GSPMA had also borne the expenses for printing of the Display Materials. An estimated 10, 000/ visitors including students visited ICPE Stall and many of them had interacted with ICPE ENVIS Team.



National Evaluation - Cum - Interaction Workshop of all ENVIS CENTRES at DELHI From 17th to 19th February, 2016

National Evaluation cum Interaction Workshop was successfully conducted for the first time at New Delhi during 17th to 19th February 2016. Envis Workshop which had seen some events for the first time in the Envis history were: 1.) For the first time a Union Minister was present in the Envis National Workshop. 2.) For the first time the Secretary-MoEF was present during the Workshop. 3.) For the first time all the 70 ENVIS Centres which encompass all the aspects of Environmental matters got an opportunity to display their knowledge products under one roof in one location – in a brief manner though the Minister had assured proper facilities for collecting and disseminating environmental information to the policy makers and general mass. ICPE ENVIS Centre has an important role in respect of collection and dissemination of relevant environmental information on Plastics to all stake holders. There is a great deal of Myths about Plastics in the concepts of wide range of mass. ICPE ENVIS Team will continue to do its best to clear various Myths about Plastics and projecting the realities and focusing on the various technological developments on the solution to Plastics Waste Management. These aspects were deliberated during the Workshop.



AWARENESS PROGRAMME AT Gurukul Grand Union High School & Junior College, Ambernath

ICPE Mumbai office had organised School Awareness programme at Gurukul Grand Union High School & Junior College, Ambernath on 25th January, 2016. About 350 students of Class XI & X of different streams had attended the programme along with their teachers. From ICPE, Shri Tushar Bandopadhyay, Shri Sudheer Khurana and Smt Sangeeta participated. Students interacted during the deliberation on how they could contribute in the waste management and clean-up activities. ICPE Team distributed Chocolates and started interaction on where will they throw the wrapper of the chocolates and what they know about plastics. Students had some myths about plastics, some of which were cleared during interaction. After the interaction session, they were shown the movie "Listen Plastics Have Something To say" in English. Students were interactive. They were asked, if their queries were solved and they were satisfied with the answers or not. The response was positive. Then they were shown another Cartoon movie "Eco Cool" in English. They were happy and were amazed to know that they use plastic products almost everywhere. Lastly ICPE handed over the Kit to the school students in Hindi and English which includes, Newsletter of Envis Center ICPE – Jan-Mar 2015 & Apr-Jun 2015 along with that the ICPE Booklets.



AWARENESS PORGRAMME AT Yogeshwar Hindi Vidyalaya, Ambernath

ICPE Mumbai office had organised School Awareness programme at Yogeshwar Hindi Vidyalay , Ambernath on 27th January, 2016. About 400 students of Classes VII, VII & XI of different streams had attended the programme along with their teachers. From ICPE , Shri Sudheer Khurana and Smt Sangeeta participated. ICPE Team Started the Sessions by distributing Chocolates and started interaction on where will they throw the wrapper of the chocolates and what they know about plastics. Students had some myths about plastics, some of which were cleared during interaction. They were very keen to know, how plastic can be useful and be a lesser pollutant than the rest of the factors. After the small interaction session, they were shown the movie “Listen Plastics Have Something To say” in Hindi. They were asked, if their queries were solved and they were satisfied with the answers or not. The response was positive. Then they were shown another Cartoon film in Hindi. They realized the importance of segregation of waste. Two sessions were conducted in English and one session was conveyed in Hindi. The Major issues covered in thoses sessions are Do not ask the thin plastics bags from the vendor, Carry your own thick plastic bag or cloth bag or a jute bag whichever is available, Follow two bin culture to separate wet waste and dry waste.



The Times of India

Title : Govt. notifies strict rules to discourage use of plastic

Author : Vishwa Mohan

Location : New Delhi

Article Date : 03/19/2016

User Fee To Be Charged, Violators Will Have To Pay Penalty

The Centre on Friday notified stringent plastic waste management rules to regulate use of the hazardous material and handle the waste generated by it. Besides, it also banned use of plastic carry bags of less than 50 microns in thickness as against the existing norms of less than 40 microns. Be it manufacturers, shopkeepers, street vendors or waste generators including individuals, institutions and organisers of big events like political rallies, religious gatherings and marriage or similar other functions, the government under the new rules enlisted certain 'dos' and 'don'ts' for everyone and introduced a concept of "user fee" and "waste management fee" at different levels.

Under the new rules, which are to be implemented within six months, the violators will have to pay penalty for not disposing of plastic waste in the prescribed manner. The amount of fine for the violators will be decided by the local civic bodies. "The Centre, on its part, will not renew registration of producers manufacturers unless they come out with an action plan for setting up plastic waste management system," said environment minister Prakash Javadekar. If the new rules are properly implemented by municipal bodies in urban areas and gram panchayats in rural areas, shopkeepers, street vendors and users of plastic carry bags will have to move to bags of non-plastic material. For the full report, log on to <http://www.timesofindia.com>

NEW PLASTIC WASTE MANAGEMENT RULES

More stringent than 2011 rules

To be implemented within 6 months

Impacts manufacturers, importers, retailers, vendors, urban civic bodies and gram panchayats



Responsibility of manufacturers/importers

- Cannot manufacture/import plastic carry bags of less than 50 microns of thickness
- Manufacturing/use of non-recyclable multi-layered plastic to be phased out in two years
- Manufacturers of other products (like gutkha or any other produce using plastic wrapping materials) will have to pay prescribed fees to states. Collected fund will be disbursed among civic bodies and gram panchayats for taking measures to dispose of plastic waste

Responsibility of waste generators

- Organisers will have to segregate waste and hand over to authorised agencies
- Will have to pay users' fee to local bodies
- Will have to pay fine in case of violation

Responsibility of retailers/street vendors

Shopkeepers and street vendors, willing to provide plastic carry bags, will have to get registered with local body on payment of 'plastic waste management fee' of minimum ₹ 48,000 per annum



Have to display at prominent place that the plastic carry bags are given on payment

Points to ponder

India generates **15,000 tonnes** of plastic waste everyday



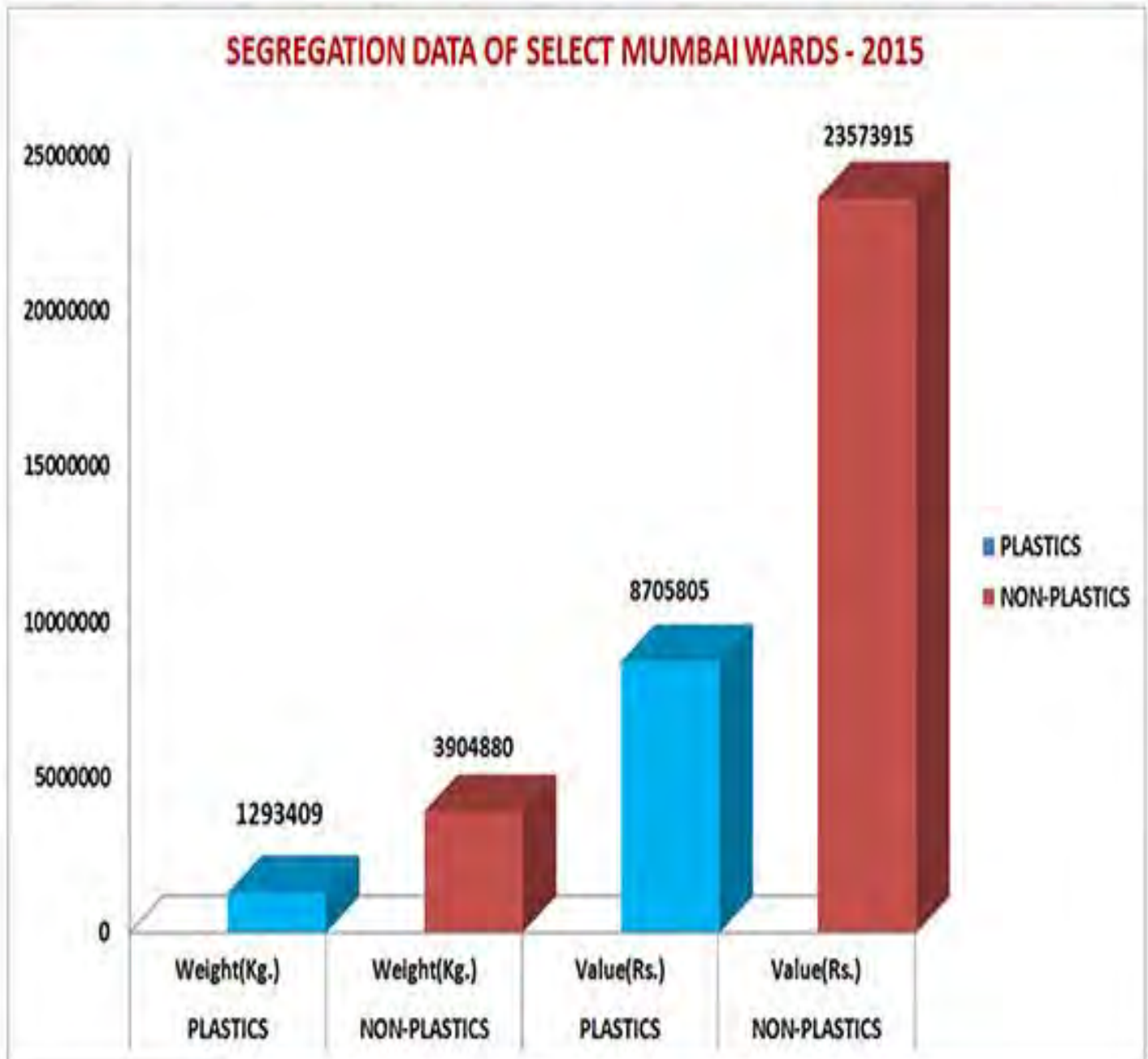
9,000 tonnes of plastic waste are collected and sent for recycling



6,000 tonnes remain uncollected and get disposed of in hazardous manner

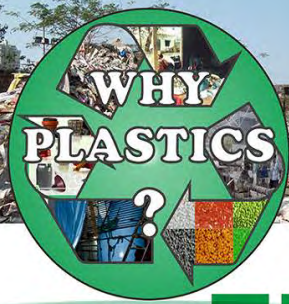
DATA SHEET

DRY WASTE COLLECTION FIGURES



In 2015, about 120 Waste Pickers segregated more than 5198 Mts of Dry Waste & Earned Rs. 3.2 Crores (Rs. 22000/- Per Month, Per Waste Picker) by selling the segregated waste to Recyclers.

This Clearly Shows that Dry Waste When Segregated at Source Could Generate Wealth



ERADICATING POLIO

PLASTIC DROPPER BOTTLES
DELIVER VACCINE TO MILLIONS OF BABIES.

SAFELY



Image Source: http://www.mckinsey.com/insights/middle_east_and_africa



Image Source: <https://plus.google.com/photos/104898985416376295233/albums/6113136356029516737>



Image Source: <http://www.counselheal.com/articles/6414/20130819/israel-launches-national-campaign-vaccinates-30-000-children-against-polio.htm>



Indian Centre for Plastics in the Environment