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**ICPE Stall at
Plastindia 2015
Gandhinagar**



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**Regional ENVIS
Evaluation - Cum -
Workshop
(Western Region) of
MoEFCC
at NEERI, Nagpur from 16th to
17th February, 2015**



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**One Day Workshop on Municipal
Solid Waste Management with
special emphasis on Plastics
Waste Management at Kolkata
on 20th March, 2015**

NAME OF THE ENVIS CENTRE



INDIAN CENTRE FOR PLASTICS IN THE ENVIRONMENT

Olympus House, 2nd Floor, 25, Raghunath
Dadaji Street, Fort, Mumbai - 400 001.

Tel.: +91 22 4002 2491, 2261 7137 / 7165

Fax: 2261 7168

E-mail: icpe@icpe.in, icpe@envis.nic.in

Web sites

www.icpeenvis.nic.in

www.icpe.in

...

1009, Vijaya Building, 10th Floor, 17
Barakhamba Road, New Delhi - 110 001.

Tel.: 011 4359 6329 • Telefax: 011 2332 6376

E-mail: icpedelhi@airtelmail.in

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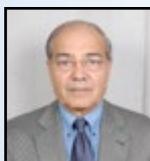
Area of Activity

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

Head of Institution

Mr. K. G. Ramanathan

President - GC



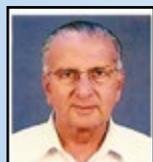
Other Office Bearers



Mr. S. K. Ray

Hon. Secretary /

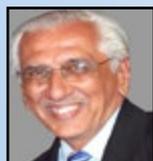
Member - EC



Mr. P. P. Kharas

Hon. Treasurer /

Member - EC



Mr. Vijay Merchant

NGO - Project

Member - GC

ICPE-ENVIS Co-ordinator

Mr. T. K. Bandopadhyay

Sr. Technical Manager



Designed By

Mr. Sudheer Khurana

Sr. Programme Officer



Plastics for Packaging of Foodstuffs, Pharmaceuticals and Drinking Water

Food Safety and Food Safety and Standards (Packaging and Labelling) Regulations, 2011, Government of India declares that "Containers made of plastic materials should conform to the following Indian Standards Specifications, used as appliances or receptacles for packaging or storing whether partly or wholly, food articles namely:-

IS 10146 (for Polyethylene) / IS 10142 (for Polystyrene) / IS 10151 (for PVC)
IS 10910 (for Polypropylene) / IS 11434 (for Ionomer Resins) /
IS 11704 (for Ethylene Acrylic Acid copolymer) / IS 12252 (for PET) /
IS 12247 (for Nylon 6) / IS 13601 (for EVA) / IS 13576 (for Ethylene Methacrylic
Acid - EMAA) etc

It is thus clear that all the above mentioned plastics materials are approved for use in contact with foodstuffs. By virtue of the Bureau of Indian Standards specifications, all these plastics materials are approved for use in contact with pharmaceuticals and drinking water too. The list of BIS approved plastics materials for food etc contact applications is available in ICPE ENVIS website.

When certain plastics material (or any other material for that matter) is approved for use in direct contact with foodstuffs, pharmaceuticals and drinking water by Bureau of Indian Standards, which is a Member of International Organisation for Standardisation (ISO), which is followed by 163 countries worldwide, it is obvious that these are safe packaging materials. There is thus no ambiguity about the position that plastics are safe packaging materials.

Despite these positive attributes of plastics, there are some issues which have been surrounding the material ever since its growth rate increased. These issues mostly relate to the management of waste created by plastics products after its use, mostly in the packaging applications. The important issue of waste management as a fallout of improper disposal of plastics packaging waste has been addressed by plastics recovery / recycling system. Technologies have been developed for recycling all types of plastics waste and recovery of the latent energy. However, segregation of Dry and Wet Waste at source of waste generation is the most important step for achieving success in the implementation of any waste management activity including plastics waste management.

ICPE has been working in the area of Plastics Waste Management since its inception in 1999 by way of setting up of pilot projects on segregation and recycling in some parts of the country and organising Awareness Programmes among students and general mass to think and spread the message of proper waste management to keep our environment clean. In the developed countries world over, stake holders including the manufacturers and users of plastics packaging products, join hands with the local civic bodies / municipalities in packaging waste activities. In India too, this practice should prevail for our own safety.

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

ICPE At Plastindia - 2015 Gandhinagar, Gujarat

ICPE had participated in the 9th International Plastics Exhibition & Conference held during February 5 – 10, 2015 at Gandhinagar, Gujarat. ICPE had focused its Awareness Programme on the Benefits of Plastics, Issues related to the handling of the waste generated after the use of plastics – mainly from the packaging sector and the scientific solutions thereof with the help of Case Studies, by way of Display Panels, Notes and Samples of recycled plastics products. Although plastics products, especially plastics packaging, are used by common mass in their day to day life in all sections of the economic levels and in all areas of geographical spread of the country (in all over the World), however the general mass as well as policy makers in many occasions, are unable to appreciate the real facts about how plastics benefit the environment in many ways. Through the Display Panels, Realities of Plastics were brought forth to the public view. It was observed that many of the facts about plastics – especially the fact that plastics emit least Green House Gas to the atmosphere compared to the alternate packaging materials like glass, aluminium, paper etc, are not known to general mass. The fact that plastics consume least energy compared to alternative materials and thus saving the environment to a great extent is also not realised by the critics. Special Panels were displayed to show how all types of plastics

waste, without any segregation could be Co-processed in Cement Kilns as a source of energy in partial replacement of conventional Coal in a scientifically proven method. Plastics waste of the entire country could be disposed of in a scientific manner benefiting the environment. Panels on other methods of plastics recycling also were on display. Throughout the exhibition period, ICPE Pavilion screened short Awareness Films on the benefits of plastics, various issues and solutions. Visitors, including students who visited ICPE Pavilion had said that they had learned the realities about plastics. Shri Surjit K Chaudhary, IAS, Secretary, Department of Chemicals and Petrochemicals, Ministry of Chemicals and Fertilisers and Shri Avinash Joshi, IAS, Joint Secretary of the same Ministry had visited ICPE pavilion among others. During the exhibition period, the organisers – Plastindia Foundation, had hosted the Conference of 24th Asia Plastics Forum on 6th and 7th February, 2015. Country representatives of Japan, Thailand, Malaysia, Indonesia, Bangladesh, Myanmar and Vietnam and India made presentations on the status of Plastics Waste Management in their respective countries. Shri Tushar K Bandopadhyay of ICPE made the presentation on the Country Paper on the Status of Plastics Waste Management in India.



ICPE At Plastindia - 2015 Gandhinagar, Gujarat

Inner Panels

Continued.....

Panel - 1



Indian Centre for Plastics in the Environment
www.icpe.in ; www.icpeenvs.nic.in

The Genesis

Indian Centre for Plastics in the Environment - ICPE, was set up on the recommendation of a task force constituted by the ministry of environment and forest (MoEF), Government of India in January, 1999, to act as a nodal agency to handle all issues related to Plastics in the Environment in the country




SYNOPSIS OF ICPE ACTIVITIES

WASTE MANAGEMENT	SCIENCE & TECHNOLOGY
Waste Pilot Project on Segregation of Waste at source in select Mumbai Wards (with BMC and NGOs)	Establishment of Protocol for Co-Processing of Plastic Waste in Cement Kilns in India - jointly with ACC Ltd
PET Bottle Compactor Project at Bombay Central Rly Stn.	Construction of Asphalt Roads using Plastics Waste & Imparting Training to Local Associations / Groups
PET BOTTLE Waste Management in Eco-sensitive hill station - Malheran (with Bokeri and Local Civic Body)	Testing & Establishing the fact that Plastics Processing is Environmentally Safe (with SIIR, Delhi)
PWW Projects in Mahabaleswar - with Pune Association	
PWW Projects at Tirupati - with Hyderabad Association	
Project at Ward 12 of Kolkata with Kolkata Association	
PET Bottle Waste Management at Sanjay Gandhi National Park, Mumbai (with Plastindia Foundation)	
Zero Waste Project at New Matl Baugh Colony, New Delhi by Setting up Pilot Plant for converting PW into Fuel (with SPWW)	

Indian Centre for Plastics in the Environment

Panel - 2,3,4

Panel - 6



SYNOPSIS Panel - 5

ICPE SPONSORED RESEARCH STUDIES

- Plastics for Environment and Sustainable Development - (Contribution from IIT-D & KGP, NCL, ICMR, IIP, CIPET)
- Plastics for Food Packaging - (by IIP)
- Plastics on Conservation of Land, Water, Forests - (by IIT, KGP)
- Safe Use of Plastics in Food and Food Products - (by CFTRI, Mysore)
- LCA Study - Milk Pouches, Atta Packaging and Lube Oil Packaging - (by IIT, Delhi)
- Emissions and other Environmental Aspects of Plastic Processing - (by SIIR, Delhi)
- LCA Study of Plastic Pipe, Profiles, Woven Sacks and Furniture (Summary Report) - (by Ernst and Young)



Indian Centre for Plastics in the Environment



AWARENESS PROGRAMMES

Conducted Programmes in Various Parts of the Country to Create Awareness on Myths and Realities about Plastics & motivating students to think and spread the message of proper waste management to keep our environment clean

Contacted more than 50, 000 Students in their class rooms

Assistance Provided to Associations and Groups for Conducting Such Programmes in their respective Locations





Indian Centre for Plastics in the Environment



ICPE AS A RESOURCE CENTRE

ICPE remains the Resource for Drafting Answers to Parliament Queries on Plastics



ICPE is one of the Top Environmental Information System Centres (ENVIS), of MoEF (Govt. of India). ICPE Website www.icpeenvs.nic.in contains wide range of Environmental Information on Plastics



ICPE Provides its Technical Expertise to Government Departments for Drafting Rules & Regulations and to BIS for Framing Various Standards on Plastics



ICPE provides inputs on Science & Technology of Plastics to all stake holder Industries & Associations to highlight positive roles of Plastics in various applications

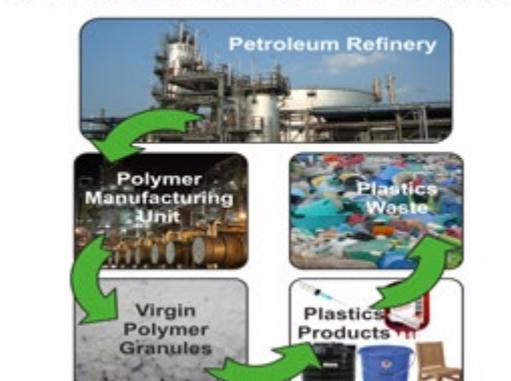


Indian Centre for Plastics in the Environment

Panel - 7



PLASTICS ARE MADE BY POLYMERISING BASIC CHEMICALS EXTRACTED FROM CRUDE OIL / NATURAL GAS



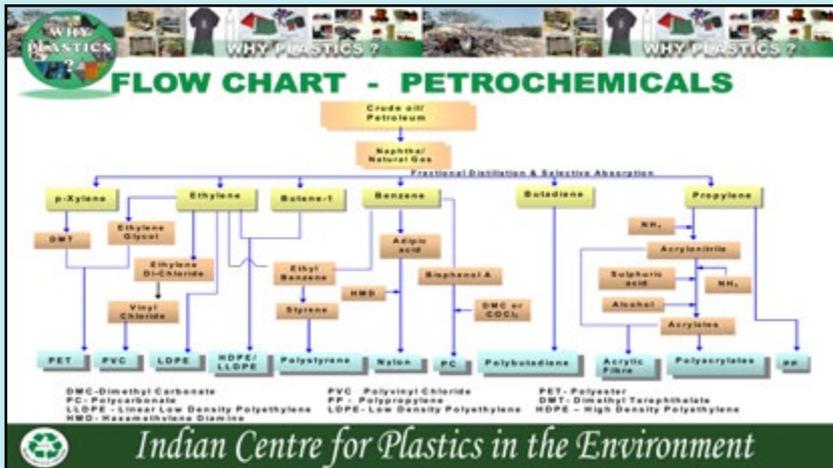

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Panel - 8

ICPE At Plastindia - 2015 Gandhinagar, Gujarat

Inner Panels

Continued.....



Panel - 9,10

Panel - 12

MAJOR APPLICATIONS OF PLASTICS

- ➔ Agriculture
- ➔ Healthcare / Medical
- ➔ Education
- ➔ Pipes for Water, Gas and Sewerage
- ➔ Building & Construction – Flooring / Doors & Windows / Drainage Pipes, Water Storage Tanks, Construction Linings etc.
- ➔ Cables
- ➔ Electricals & Electronics Equipments
- ➔ Thermal Insulation
- ➔ Automobile, Aviation & Railways
- ➔ Packaging..... 35 – 40%
- ➔ Household
- ➔ Furniture
- ➔ Toys & Many Others

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Panel - 11

WHY PLASTICS ? ENERGY SAVING

Material	Energy Requirement KWH / KG ¹
Aluminum	74.1
Steel	13.9
Glass	7.9
Paper	7.1
Plastics	3.1

Source: Scott, G and Gilford, D, Editors, Degradable Polymers, Principles and Application, Chapman & Hall, London, 1995

Indian Centre for Plastics in the Environment

Panel - 14

WHY PLASTICS ? ENERGY SAVING

One Lac MT. of Atta Packaging
Jute vs Plastic

Energy Consumption in GJ for Manufacturing Packaging Raw Materials, Packagings and Transportation of Atta

Energy Saving - 81%
Energy Recovery with Plastics Waste - 35GJ

Indian Centre for Plastics in the Environment

Panel - 13

Energy Saving - 81%
Energy Recovery with Plastics Waste - 35GJ

WHY PLASTICS ? LESSER EMISSIONS

Environmental Burden During Production of Raw Material & Bags

Environmental Burden in Kg	Jute Bag	Plastic Bag
Air Pollution		
CO	54.3	0.6
CO ₂	4610.2	760
SO _x	134.8	5.2
Nit	48.7	4.8
CH ₄	39.5	3.2
HCL	5.3	0
Dust	67.6	1.4
Water Pollution		
Suspended Solids	202.3	0.2
Chlorides	4325.5	0.1

The Environmental Burden During Transportation of the Finished Bags

Emission	Gm./km	Excess Emission for Jute Bags	Plastic Bags
CO ₂	781	11187.3	Taken as Basis
CO	4.5	61	Taken as Basis
HCl	7.1	15.6	Taken as Basis
NO _x	8	113.8	Taken as Basis
Particulates	0.36	5.1	Taken as Basis
Total Regulated Soluble Emission	13.96	198.5	Taken as Basis

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WHY PLASTICS ? LESSER POLLUTION TO AIR & WATER

POLYETHYLENE & PAPER

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Panel - 15



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Inner Panels

Continued.....

WHY PLASTICS ?

Plastics Panel - 16

TOP GREENHOUSE GAS EMISSION SAVER

In 2005, Total Global Emissions was 46 Gt CO₂e
It could have been 51.2 Gt CO₂e, but for the saving by Chemical Industry
Saving by Chemical Industry 11%

Among The Top 10 Green House Gas Emission Saving Sectors
4 are Plastics

PLASTICS SAVE GREEN HOUSE GAS EMISSIONS

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WHY PLASTICS ?

Panel - 17

GHG EMISSION SAVING BY PLASTICS PACKAGING

Total Saving ~ 220 Mt CO₂e

Comparing Segments	Comparing Materials
Carry Bags	Plastics : PE/PP/PVC/PS/EPSPET
Flexible Packaging	Glass / Thin Steel / Al
Rigid Packaging	Corrugated Box / Paper Card Board / Wood Beverage Carton

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WHY PLASTICS ?

Panel - 18

Did you know that if plastics in packaging were replaced by traditional materials, **world energy consumption would double ?**

e = x 2

Did you know that if plastics in packaging were replaced by traditional materials, **CO₂ emissions would increase 7 times over, adding to the greenhouse effect ?**

CO₂ x 7

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WHY PLASTICS ?

Panel - 19

TOXICITY

MYTHS:

PLASTICS ARE TERMED AS TOXIC AND INJURIOUS TO HEALTH

REALITIES:

PLASTICS ARE INERT MATERIALS AND DO NOT POSE ANY DANGER OF TOXICITY

EMISSIONS DURING PROCESSING OF PLASTICS ARE WELL WITHIN REGULATORY NORMS (STUDY BY SIIR - DELHI)

ADDITIVES USED IN PLASTICS - QUALITY & QUANTITY, ARE APPROVED BY BIS / FDA

EMISSIONS AT FIRE SITUATION HAVE SIMILAR OR LESSER IMPLICATIONS IN COMPARISON TO SITUATION INVOLVING NATURAL ORGANIC MATERIALS LIKE WOOD, PAPER & COTTON

(HOWEVER UNCONTROLLED BURNING OF ANY WASTE IS NOT PERMISSIBLE)

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WHY PLASTICS ?

HEALTH & SAFETY

PLASTICS USED FOR FOOD CONTACT APPLICATIONS ARE APPROVED AS SAFE MATERIAL AS PER BIS & OTHER INTERNATIONAL STANDARDS

AS IMPLANTS WITHIN HUMAN BODY

IN MEDICAL APPLICATIONS LIKE IV BOTTLE, BLOOD BAGS, PACKAGING OF LIQUID FORMULATIONS & DISPOSABLE INJECTION SYRINGES

FOR PACKAGING OF LIQUID MILK, DRINKING WATER & FOODSTUFFS

Indian Centre for Plastics in the Environment

WHY PLASTICS ?

PLASTICS ARE SAFE FOR FOOD CONTACT APPLICATIONS

Approved by BIS, ISO and Standards Authorities of All Countries for Use in Contact with Foodstuffs, Pharmaceuticals and Drinking Water & Positive Lists of Constituents of Plastics Materials in Contact with Foodstuffs, Pharmaceuticals and Drinking Water are Specified

PET:IS 12252: 1987 / 2005 & IS 12229: 1987 / 2000
PE:IS 10146: 1982 / 2003 & IS 10141: 1982 / 2001
PVC:IS 10151: 1982 / 2003 & IS 10148: 1998 / 2003
PP: IS 10910: 1984 / 2003 & IS 10909: 2001
PS:IS 10142: 1999 / 2003 & IS 10149:1982 / 2003

Other Plastics Materials have Specific Approvals

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Panel - 20

Panel - 21



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Inner Panels

Continued.....

BIODEGRADABILITY

Panel - 22

MYTHS:
NON-BIODEGRADABILITY OF NORMAL PLASTICS IS TERMED AS THE MAJOR REASON OF WASTE MANAGEMENT PROBLEM AS IT REMAINS IN THE LANDFILL FOR LONG TIME

REALITIES:
PLASTICS ARE USEFUL FOR THEIR LONG LIFE CHARACTERISTICS
BD PLASTICS ARE REQUIRED IN SPECIFIC AND SPECIAL APPLICATIONS
CO₂ & CH₄ ARE RELEASED DURING COMPOSTING. INDIAN LANDFILLS DO NOT HAVE CH₄ CAPPING FACILITY
BD PLASTICS DONOT FULFILL CRITICAL PACKAGING SPECIFICATIONS

REUSE AND RECYCLING IS PREFERRED TO ENCOURAGE RESOURCE MANAGEMENT

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PLASTICS ARE 100% RECYCLABLE

ISO 15270:2008

PLASTICS RECYCLING / RECOVERY OPTIONS

Indian Centre for Plastics in the Environment

Panel - 23,24,25

Panel - 27

ENERGY RECOVERY

Co-processing In Cement Kiln

Panel - 26

Calorific Values	
PE :	46
PP :	44
PA (Nylons) :	32
PET :	22
Coal :	29

All Types of Mixed Plastics Waste Can be Disposed

Indian Centre for Plastics in the Environment

POLYMER WASTE TO FUEL

All Types of Mixed Plastics Can Be Converted into Fuel
Segregation Not Essential

Output Is LDO (Light Diesel Oil) Range Fuel Having Commercial Value

Commercial exploitation already commenced in India
ICPE with GPWM have installed model project in New Moti Baugh Colony, Delhi

Some Corporates Started Using the Process For Safe Disposal of their own Plastics Waste

Encouragement Required From Local Bodies for Wider Implementation

Capacity : - 50 Kg Batch Model Plant

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PLASTICS WASTE IN ROAD CONSTRUCTION

Vidyasagar Street - Kalyani, West Bengal

Improves Quality of Asphalt Road
Reduce Cost of Construction
Addresses Disposal Issue of Plastics Waste

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Panel - 28

SEGREGATION OF WASTE AT SOURCE

Indian Centre for Plastics in the Environment

Panel - 29



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Inner Panels

Continued.....



Panel - 30

**Do Not Litter
Keep Your Environment Clean**

- Segregate and Throw Waste Only in Waste Bins.
- Use Two Bins - One for Wet Waste, One for Dry Waste

Plastics, Metals, Paper ...
Can be recycled into useful products.

Waste Food and other Biodegradable Waste.
Can be composted into manure.

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Panel - 31

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Outer Panels

Indian Centre for Plastics in the Environment

Vision

To improve the knowledge and understanding of the environmental benefits of plastics and to represent the plastics industry in promoting responsible use and recovery of plastics resources.

Mission

To work in partnership with government and local bodies, non-governmental organization and industry to advance solid waste management solutions that optimise Reuse, Recycling and Recovery for sustainable developments.

To Provide information on plastics, environmental performance, attributes and benefits in resource conservation over the entire life cycle of plastic products.

To encourage sustainable plastics recycling.

Panel - 1

Indian Centre for Plastics in the Environment

આઈસીપીઈ મિનનકો કરની સ્વચંદ્ર સંસ્થા છે. તેના સભ્યોમાં પ્લાસ્ટિક, રેઝિન અને રસાયણના ઉત્પાદકો, પ્રોસેસરો, કન્વર્ટર્સ, નિઝામકારો, મશીનરી અને ઉપકરણ પુરવઠાકારો, પ્લાસ્ટિક તાલીમ અને શિક્ષણ સંસ્થાઓ અને રિસાઈકલર્સનો સમાવેશ થાય છે.

સંકોચ

પ્લાસ્ટિકથી પર્યાવરણીય સાથો વિશે જ્ઞાન સુધારવું અને સમજવું અને પ્લાસ્ટિક સંસાધનોનો જવાબદારીપૂર્વક ઉપયોગ અને પુનઃપ્રાપ્તિને પ્રોત્સાહન આપવા માટે પ્લાસ્ટિક ઉદ્યોગનું પ્રતિનિધિત્વ કરવું.

વિશ્વ

સરકારી અને સ્થાનિક સંસ્થાઓ, મિનસરકારી સંસ્થાઓ અને ઉદ્યોગ સાથે મળીને કામ કરીને સહમ વિકાસ માટે યોગ્ય પુનઃપ્રાપ્તિ, પુનઃઉપયોગ અને રિસાઈકલિંગ માટે યત્નચર નિવારણોમાં આવેલું.

પ્લાસ્ટિક્સ, તેની પર્યાવરણ સંબંધી કાર્યક્રમના, પ્લાસ્ટિક પ્રોડક્ટોના સંપૂર્ણ જીવનચક્રમાં સંસાધન સંરક્ષણ સંબંધી જુદા તથા સાથો વિશે માહિતી પ્રદાન કરવી.

www.icpe.in / www.icpeindia.org

Panel - 2

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Outer Panels

DO YOU KNOW?

Panel - 3



Recycled Plastic lumber functions like wood and SAVES FORESTS!

DO YOU KNOW?

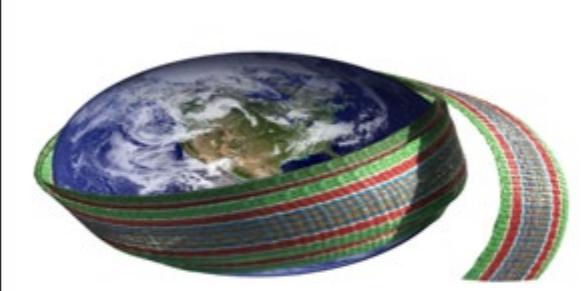
Panel - 4



SIX PET bottles can be recycled into ONE t-shirt

DO YOU KNOW?

Panel - 5

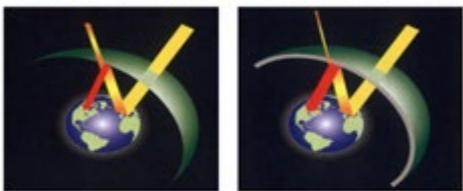


Niwar Patti made yearly from recycled plastics can WRAP THE WORLD four times

WHY PLASTICS?

Panel - 6

GLOBAL WARMING & GREEN HOUSE EFFECT



Normal Conditions
Earth's Surface reflects heat from the sun, and some of this escapes through the atmosphere into space.

Global Warming
When greenhouse gases build up in the atmosphere they absorb reflected heat, stopping its escape back into space.

MAIN GREEN HOUSE GASSES

Green House Gases	Global Warming Potential (GWP)
Carbon dioxide - CO ₂	1
Methane - CH ₄	21
Nitrous Oxide - N ₂ O	310

Explanation: CO₂ causes 21 times more GWP effect than that of CH₄.

Indian Centre for Plastics in the Environment

WHY PLASTICS?

GREENHOUSE GAS EMISSION BY SECTORS



Sector	Emission (Gt)
Electricity and Heat	18.2
Industry	12.9
Transport	3.6
Others	24.5
Deforestation	13.8
Agriculture	13.5
Waste	3.6

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WHY PLASTICS?

POSSIBLE IMPACT OF CLIMATE CHANGE



- Melting of Himalayan Glaciers
- Retreat of Arctic Ice Cover
- Drying up of Rivers
- More frequent Forest Fires
- More frequent Floods and Storms
- Rising Sea Levels

Indian Centre for Plastics in the Environment

Panel - 7

Panel - 8



ICPE At Plastindia - 2015 Gandhinagar, Gujarat

Outer Panels

Continued.....

WHY PLASTICS ?

गन्दगी मत फैलाओ अपने पर्यावरण को साफ - सुथरा रखो

Panel - 9

- कचरे को अलग-अलग कचरे के डिब्बों में डालो।
- कचरे के डिब्बों का इलाजाल कचरे - एक गीले कचरे के लिए एक सूखे कचरे के लिए।



प्लास्टिक, चातुर्ण, कागज...
को संभावित रूप से इलाजाल कचरे में डालो।
जुलन तथा अन्य वैशिक-विशालीय कचरे
के लिए डालो।

Indian Centre for Plastics in the Environment

WHY PLASTICS ?

PLASTICS ARE 100% RECYCLABLE

Panel - 10

This Bench is made from Recycled Mixed Plastics Waste




Indian Centre for Plastics in the Environment

WHY PLASTICS ?

SOLID WASTE MANAGEMENT

Panel - 11



Indian Centre for Plastics in the Environment

WHY PLASTICS ?

PLASTICS IN MUNICIPAL SOLID WASTE

Panel - 12,13

Percentage of quantities in the waste at Goral (landfill) in Mumbai

Compostable Matter	23%
Plastic	6%
Paper	4%
Metals / Glass	4%
Biodegradable (Food, etc.)	55%

Source: NEERI study - 2005

CHARACTERIZATION OF TOTAL WASTE

240 kg per capita Recycling

18 kg (0.18%) remains in the Landfill

0.3 % Plastics Waste remains in Landfill

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WHY PLASTICS ?

PLASTIC CARRY BAGS SOME FACTS

- Plastic Carry Bags Generate 60 - 79% Less Green House Gases than Paper Bags
- Plastic grocery bags consume 40% less energy during production and generate 80% less solid waste after use than paper bags.
- Paper sacks generate 70% more air pollutants and 50 times more water pollutants than plastic bags do.
- It takes 91% less energy to recycle a kilogram of plastic than a kilogram of paper.



Indian Law prohibits use of less than 40 microns plastics carry bag... to discourage one time use

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The pouch that brings you milk and the bag you carry for shopping are made from the same material.

That's why plastic bags are not harmful.

For more information visit www.icpeenviis.nic.in

Do not litter. Plastics are recyclable.

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Panel - 14

Panel - 15

ICPE At Plastindia - 2015 Gandhinagar, Gujarat

Outer Panels

Continued.....

Panel - 16



The pouch that packs your cooking oil and the bag you carry for shopping are made from the same material.
That's why plastic bags are not harmful.
For more information visit www.icpeenvs.nic.in



Do not litter.
Plastics are recyclable.

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Panel - 17



The bottle that packs IV fluids and the bag you carry for shopping are made from the same material.
That's why plastic bags are not harmful.
For more information visit www.icpeenvs.nic.in



Do not litter.
Plastics are recyclable.

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Panel - 18



The water bottle your child carries and the bag you carry for shopping are made from the same material.
That's why plastic bags are not harmful.
For more information visit www.icpeenvs.nic.in



Do not litter.
Plastics are recyclable.

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WHY PLASTICS ?

Panel - 19

**TEAM INDIA'S NEW JERSEY FOR
ICC CRICKET WORLD CUP 2015
IS MADE OUT OF
RECYCLED PLASTIC BOTTLES!**



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WHY PLASTICS ?

Food Packaging Applications of PET



Beverages, soft drinks, fruit juices, and mineral waters.

Especially suitable for carbonated drinks, cooking & salad oils, sauces & dressings.



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Panel - 20

WHY PLASTICS ?

**ગંદકી નહીં ફેલાવો.
તમારા પર્યાવરણને સાફસૂથરું રાખો.**

- કચરાને બાલન બાલન કરીને કચરાના ડબ્બામાં નાખો.
- કચરાના ડબ્બાઓનો ઉપયોગ કરો - એક બીના કચરા માટે, એક સુકા કચરા માટે.



પ્લાસ્ટિક્સ, પાનુઓ, કાનખ...
ને રિસાયકલ કરીને ઉપયોગી ચીજો બનાવી શકાય છે.
બેટપાસ અને અન્ય કીપર - વિખંડનીય કચરો
સેલુલોઝ પાનર સ્લામરમાં ઉપયોગી થાય છે.



Indian Centre for Plastics in the Environment

Panel - 21



Regional ENVIS Evaluation - Cum - Workshop (Western Region) of MoEFCC at NEERI, Nagpur from 16th to 17th February, 2015

A two day evaluation-cum-training Workshop for ENVIS Centres of Western Region (i.e., those located in the states of Maharashtra, Gujarat, Chhattisgarh and Madhya Pradesh) was held at Nagpur, Maharashtra hosted by ENVIS Centre at CSIR-National Environmental Engineering Research Institute during 16th and 17th February, 2015. Around 30 participants of 13 thematic as well as State/UT ENVIS Centres participated in the Workshop.

The Workshop was inaugurated by the Director NEERI, Dr. Satish R. Wate. Speaking on the occasion, Dr Wate stressed on the significance of environmental information as all important policy decisions hinge on the insightful information. He congratulated the Ministry for feeling the need to establish ENVIS Scheme and hoped that ENVIS will keep serving the stakeholders and public at large for their multifarious information requirements. Shri Abhay Kumar, Deputy

Economic Adviser, MoEFCC said that the Ministry has roped in distinguished experts cutting across various fields to evaluate as well as advise the Centres. Among the experts who attended the Workshop for evaluation included Shri Krishna Rao T.V.P., Dr. Rajesh Gupta, Dr. A.K. Soni and Dr. Tamil Selvan. Two parallel sessions for evaluating the activities of Thematic and State ENVIS Centres were carried out in the Workshop.

Shri T K Bandopadhyay, ICPE Envis Coordinator, had launched their centre's Newsletter at the workshop. The second day of the Workshop was marked by a crucial training by NRSC official Shri Arul Raj on Bhuvan portal, a geospatial portal to enable the GIS-based information in the websites of the ENVIS Centres. The Workshop concluded with a thought-provoking session by experts who shared their observations and suggestions followed by comments by coordinators of ENVIS Centres.



One Day Workshop on Municipal Solid Waste Management with special emphasis on Plastics Waste Management at Kolkata on 20th March, 2015

Under the sponsorship of Ministry of Environment, Forests and Climate Change, a One Day Workshop on Municipal Solid Waste Management with Special Emphasis on Plastics Waste Management was jointly organised by the ENVIS Centres of ICPE and NSWA (National Solid Waste Association of India) at Administrative Training Institute, Government of West Bengal, Salt Lake, Kolkata on 20th March, 2015. Shri Kaushik Ghosh, Asst. Professor, Urban Management Centre, was the principal coordinator of the programme on behalf of the Administrative Training Institute, Government of West Bengal.

Professor Ms. Nandi of the Centre and Ms. Maumita Chatterjee, an NGO, helped organising the programme. Shri T. K. Bandopadhyay of ICPE had conducted the main session on Plastics Waste Management and Dr. Amiya Kumar Sahu of NSWA had conducted the session on MSW Management. 86 officials from 42 Municipalities of different Districts of West

Bengal had attended Workshop. One Deputy Mayor and several Elected Councilors had attended the Workshop and were fully satisfied with the contents. Representatives of some local Waste Management Equipment Manufacturers also participated. This was a successful Workshop considering that all the Municipalities were eager to know about the practical solutions to scientific disposal of 'non-recyclable' (differently recyclable) plastics waste. Various technologies were discussed including Co-processing in Cement Kiln, Pyrolysis of Plastics Waste in to Fuel and Use of Plastics Waste for Construction of Asphalt Road.

ICPE assured to cooperate the Municipality Authorities for implementation of any of the technologies for safe disposal of plastics waste. At the end of the Workshop, all the participants were awarded Certificate of Participation in the Workshop. All were enthusiastic for attending similar follow up programme for performance analysis.



Plastics Consumption and Waste Generation in India

No authentic 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.

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 %. Although in the recent years, consumption of plastics has gone up (about 9.182 million tons in 2013 – 14), however several new technologies also have been developed for feedstock recycling, road construction or energy recovery from plastics waste. Co-processing of all types of plastics waste in cement kilns is one such development. With efficient waste collection mechanisms, India can effectively address the plastic waste management issues.

Consumption of Select Plastics Materials Product Wise 2008-09(KT)		
	Commodity Plastics	Consumption
1	Low Density Polyethylene	273
2	High Density Polyethylene	1115
3	Polystyrene	194
4	Polypropylene (Inc. Co-Polymer)	1901
5	Expandable Polystyrene	53
6	Poly Vinyl Chloride	1388
7	Linear Low Density Polyethylene	1013
	Total	5937

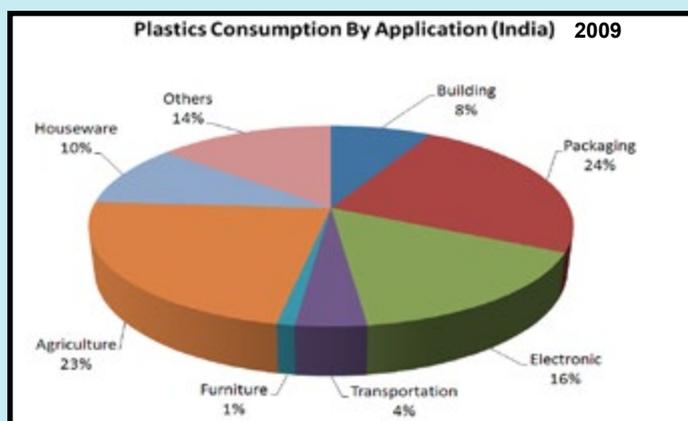
	Performance Plastics	Consumption
1	ABS Resin	88
2	Nylon-6	47
3	Polymethyl Methacrylate	3
4	Styrene Acrylonitrile	64
5	Nylone 6,6	1
	Total	203

Source: Dept. of Chemicals & Petrochemicals, Govt. of India

Consumption of Plastics Materials in India 2008-09(KT)			
		Commodity Plastics	Performance Plastics
1	Production	5060	145
2	Imports	1275	67
3	Exports	357	9
	Consumptions (1+2-3)	5978	203

Total 6181 KT

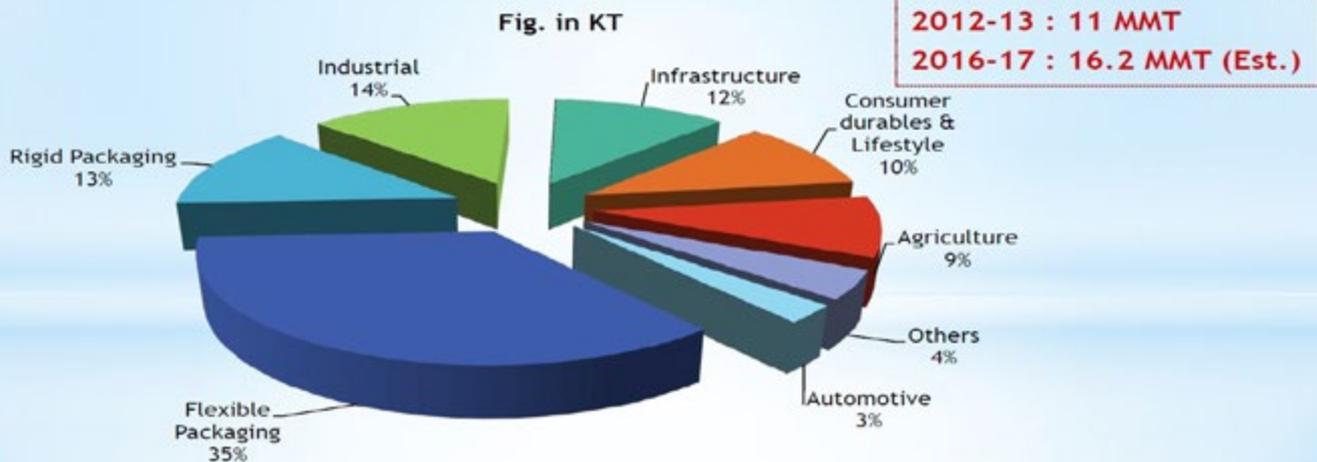
Source: Dept. of Chemicals & Petrochemicals, Govt. of India



A British Plastic Federation Overview for Indian Plastics Industry

DATA SHEET

Thermoplastic Polymer Consumption - Applicationwise 2012-13



- Packaging Industry growing at 15% annually valued at USD 15.6 Billion
- Flexible Packaging accounts for 30%

Demand → 11 MMT (2012) → 20 MMT by 2020 : ~ 9 % CARG

Source: PlastIndia Foundation Committee

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Plastics Recycling

- Last industry study on Recycling published in 2008
- Number of Organised Recycling Units: 3500
- Number of Unorganised Recycling Units: 4000
- Major Types of Plastics Recycled: PET, HDPE, PVC, LDPE/LLDPE, PP, PS & others like ABS, PMMA etc.
- Manpower directly involved in Plastics Recycling: around 6, 00,000
- Manpower indirectly involved in Plastics Recycling: around 10, 00,000
- Quantum of Plastics Recycled per annum: 4 MMT. Estimation based on following facts :
 - Almost 100% of Rigid Packaging products is recycled except EPS
 - 70% of PET Bottle is recycled
 - Large imports of Plastic scrap & waste pairings
 - Waste generated by Plastic Industry, Industrial Plastic Waste
 - Recycling including the ones from household, furniture etc applications
 - Plastic products which went into municipal solid waste

Source: ICPE

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THINK Before You THROW

How to dispose waste wisely.

At Household Level

- Keep two waste bins or even two plastics garbage bags.
- Think and throw Dry Waste into one and Wet waste into the other.
- Instruct your sweeper to handle them separately.



At Society / Building Level

- Instruct the Sweeper to keep the collected Dry Waste and Wet Waste Separately.
- Construct two separate areas to store Wet Waste and Dry Waste.
- Local Municipality authority would arrange to collect the Dry Waste and Wet Waste

What is Dry Waste: Consists of plastics, paper, glass, cloth, rubber, metal, etc., i.e., all recyclable material. This forms nearly 70% of the volume of waste

What is Wet Waste: Consists of garden waste, kitchen waste such as fruit and vegetable peels, egg shells, tea leaves etc., i.e. all bio-degradable material

IT'S SMART TO SEGREGATE WASTE

because the waste generated in households, consists of

Dry Waste and Wet Waste

Most of the Dry Waste can be recycled for manufacturing useful items.

Wet Waste Can be composted / vermiculated to make manure for growing plants.

**Do it - For the Sake of our Environment
Do it - Because it is now the LAW!**

Issued in the Public Interest by

Indian Centre for Plastics in the Environment in association with NGO'S, Plastics Associations and Responsible Citizens like you.



Indian Centre For Plastics in the Environment

(An Autonomous National Body Registered Under Societies Act)

25, OLYMPUS HOUSE, RAGHUNATH DADAJI STREET

FORT, MUMBAI - 400 001, TEL: +91 -22-2261 7137 / 65

EMAIL: icpe@icpe.in / icpe@envis.nic.in : Website: www.icpeenvis.nic.in, www.icpe.in