



Re-Greening the Planet

PLASTICS AND THE ENVIRONMENT

Myths & Realities

and

Frequently Asked Questions

Prepared and distributed by

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(An Autonomous National Body Registered under Society Act)

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Point **Plastics / plastic bags are harmful to plants & the soil**

Counter Point

- ✓ **Saving the Planet with Plastics Polyethylene Sheetings / Films #**
- ✓ **Mulching Films (Laid Atop the Soil)**
 - * Promote rapid crop development
 - * Protect tender young seedlings
 - * Promote transplantation
 - * Prevent weeding without Pesticides / Insecticides
 - * Reduce water losses/Evaporation
Important in Arid Land Farming
 - * Help reduce soil erosion
 - * Reduce rotting in Fruit / Vegetable crops
 - * Ensure safer and more effective-use of fertilizers.

same material as PE bags



Point

Plastics / plastic bags are harmful to plants & the soil

Counter Point

- ✓ **Plastics protect plant life in multiple ways**
- ✓ Plastics prevent massive deforestation by offering wood substitutes e.g.. Furniture, building materials, crates
- ✓ Plastic pipes are used extensively in Irrigation & Water Management, Flood Irrigation, Sprinkler Irrigation, Micro Irrigation (Drip/Trickle) etc.

China uses One million tonnes of PE in agricultural application alone.



Point **Plastics are not recyclable**

Counter Point

✓ **Plastics are 100% recyclable via various routes:**

- * **Mechanical recycling:** Plastics can be recycled several times into economically useful low cost products e.g. Footwear, mats, sewer pipes etc.
- * **Waste plastics are also recycled without sorting into synthetic lumber / wood products like rails, fencings, posts, benches and land scaping products**
- * **Plastics can be thermally recycled/ incinerated to recover energy**
- * **Plastics can be chemically recycled to recover monomer for reuse.**

In India we already recycle 60% of plastics from both Industry and urban waste streams Vs world average of 20-25%.

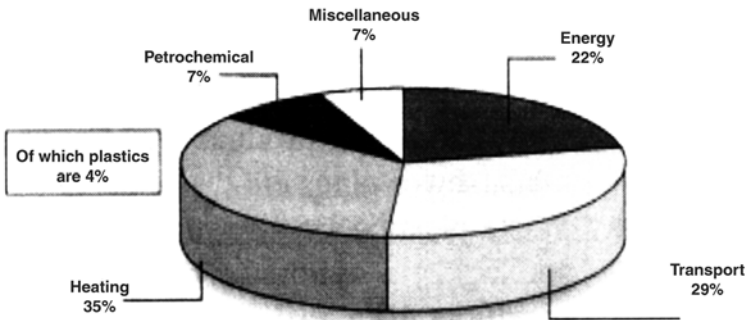


Point

Plastics deplete precious & scarce fossil fuel

Counter Point

The different uses of commercially produced oil



Plastics use globally only 4% of commercially produced oil. The rest being accounted by transport, energy and others. Infact plastics add value and extend life of fossil fuel instead of burning it directly.



Point **Plastics are toxic and are not safe for usage**

Counter Point

✓ **Plastics are used worldover safely for personal care products, packaging of food & medicine, in-vitro medical applications and for child care products.**

- * Toothbrush, toothpaste tubes, shampoo bottle
- * Milk pouch, edible oil container, ice cream pack
- * Blister packing - tablets and capsules
- * Medical disposables - I V bags, blood bags, gloves
- * Heart valve, hip joint
- * Toys, diapers.

Food and drugs authorities worldwide permit use of different plastics in various applications. Industry needs to adhere to prescribed standards.



Point

Plastic bags contain plasticizers

Counter Point

- ✓ In general, plastic bags are made from Polyethylene (PE) and Polypropylene – which are polymers of pure Carbon & Hydrogen. The material by itself is soft in nature. No plasticizers are used / required for any Polyethylene application including Poly Bags
- ✓ The campaign that Plastic bags contain plasticizers is a malicious canard
- ✓ Plasticizers are used in PVC, which is one type of plastic. Even in this case, only those plasticizers – approved by FDA, WHO or Regulatory Authorities – are used for applications which are intended for use in contact with food and pharmaceutical products.

PVC Blood Bags are used all over the world including India.



Point

Plastic bags contain titanium dioxide and lead base components which are toxic & Dyes used in coloured bags cause severe health hazards

Counter Point

- ✓ Natural colour bags are made from virgin polyethylene; these do not contain any titanium dioxide or other pigments
- ✓ Only milky white coloured bags contain titanium dioxide via masterbatch
- ✓ Titanium dioxide is a harmless inorganic compound used as a whitening/colouring agent in many products of daily use – cosmetics, medical tablets, paints & printing inks besides plastics
- ✓ The use of titanium dioxide is permitted by BIS for food contact applications.



Point

Plastic bags contain titanium dioxide and lead base components which are toxic & Dyes used in coloured bags cause severe health hazards (contd...)

Counter Point

- ✓ Most of the pigments used for making bags are organic in nature. Use of lead or cadmium based compounds does not arise at all
- ✓ The inorganic pigments used in plastics do not contain lead of cadmium
- ✓ Organic pigments which are used are compatible with the polymer to get bonded. They cannot leach out.

Industry has accepted to use natural unpigmented carry bags for food contact applications. Recycled bags will be coloured (using BIS approved pigments) for other applications.



Point

Cadmium used in plastic bags is bioaccumulative & toxic; Plastics contain 54 potential carcinogens or cancer causing agents

Counter Point

- ✓ The additives used in plastic bags are mainly antioxidants. There is no cadmium in either polyethylene or additives
- ✓ Plastic do not contain cadmium and they are not bioaccumulative
- ✓ Plastic bags do not produce any obnoxious or toxic fumes as such or upon burning
- ✓ There are no single plastics formulations / compounds / applications which contain 54 ingredients or components.

Misinformation campaign misleads the public.



Point

Plastic disposal by burning causes CO poisoning, endocrinal damage, hormone disruption, multiple cancer & affect human fertility

Counter Point

- ✓ Plastic bags are made out of Polyethylene which consist of carbon & hydrogen only. When burnt under controlled conditions, polyethylene releases harmless carbon dioxide and water vapour - same components found in the air we exhale when we breathe
- ✓ Any material – be it plastic, paper, firewood, cloth etc. when burnt under uncontrolled conditions may lead to incomplete combustion & generation of carbon monoxide (CO) & dioxines etc.
- ✓ Plastic bags in municipal solid waste streams improve the calorific value/energy content for use as Refuse Derived Fuel (RDF) for incineration – a common practice in major cities in Europe & Asia.

For Indian economy we recommend mechanical recycling of plastic bags as the first priority. As a second priority we recommend adoption of advanced (clean & green) incineration technologies to recover energy.



Point

Plastic disposal by burning causes CO poisoning, endocrinal damage, hormone disruption, multiple cancer & affect human fertility (contd...)

Counter Point

- ✓ Burning of Polyethylene does not cause endocrinal damage, hormone disruption, multiple cancer and human fertility
- ✓ Plastics are even used in controlled release of drugs for in vivo (oral) formulations.

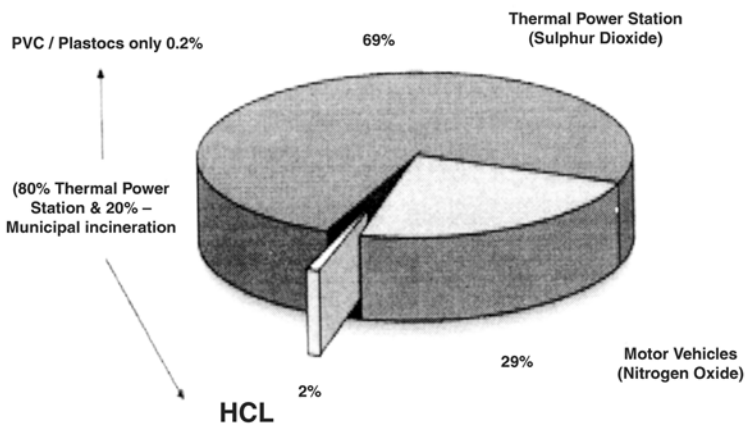
Misinformation campaign misleads the public.



Point **Plastics cause acid rain**

Counter Point

✓ **Causes of acid rain**



Acid rain – plastics : not the culprit at all.



Point Plastic bags contaminate water

Counter Point

- ✓ Polyethylene pouches (same material as plastic bags) are used to pack/serve drinking water
- ✓ Plastic bottles are globally used to pack mineral water for health and hygienic reasons
- ✓ Plastics are used extensively for domestic and industrial water filters - housings, membranes, plates and candles, etc.
- ✓ Issue is not contamination but misuse.

We do not recommend throwing of plastic bags into the water. The bags should be collected for recycling.



Point

Plastic are not biodegradable – hence threat to environment

Counter Point

- ✓ Other materials like metal and glass are also not biodegradable
- ✓ Composite containers like plastic coated paper cups, tetra packs & bricks also do not biodegrade easily (additional penalty - not recyclable / harmful leachates) :
- ✓ Biodegradation in buried land fills is a very slow process (more than 15 years)
 - * Anaerobic conditions / methanogenic bacteria
 - * Newspaper / telephone directories found in landfills even after 40 years
 - * Perishable product like waste food, raked leaves and lumbers found in landfills even after 25 years.

Source: National Geographic, May '91



Point **Plastic are not biodegradable – hence threat to environment**
(contd...)

Counter Point

- ✓ Industry has already undertaken R & D on biodegradable applications (e.g. Starch based Mulching Films) in specified areas.

Bio degradation is not economically viable for most applications. Solution lies in reuse & recycling into extended life cycle products.



Point

Plastic wastes are eco-hazardous

Counter Point

- ✓ Plastics are crushable and highly compactible; they occupy less space in land fills
- ✓ Plastic wastes are predominantly eco-neutral (no leachates to contaminate soil / ground water)
- ✓ Plastic wastes contribute to increasing calorific value of municipal solid waste for incineration (useful source of energy 8-9 GJ/ T 20 GJ/T (in W.E. plastic wastes provide 30% of energy generated in MSW recovery plants)
- ✓ Plastic films & sheets are used for protective lining of hazardous/chemical landfills to protect surrounding soil & ground water from serious contamination.

Plastics have become important material of construction in environmental engineering.



Point Paper & cloth bags are better alternatives than plastic bags

Counter Point

- ✓ If plastic bags / packaging is replaced with traditional materials like paper, cloth, jute, metal, etc., it would lead to a major penalty on the economic system
- ✓ Phenomenal increase would be affected in increase of

Weight of packaging	~300%	↑
Volume of waste	~160%	↑
Energy Requirement	~110%	↑
Cost of Packaging	~210%	↑

Hence, there are no eco-viable alternatives to plastics in modern society.



Point

Paper & cloth bags are better alternatives than plastic bags

(contd...)

Counter Point

✓ **Paper is not eco-friendly**

We need to remind ourselves that making of paper and products consumes a lot of chemicals and requires a large amount of water and effluent problems are severe. Besides paper, unless coated with polymeric materials (or wax), cannot withstand wet conditions which are widely prevalent in India, particularly during monsoon periods. Paper making also consumes a lot of energy. In the Indian context the most serious problem is the availability of pulp. Environmental degradation has unquestionably occurred due to pulp manufacturing activities as commercial forestry, on large scale, is still a taboo.

Padmabhushan Prof. M. M. Sharma (FRS)



Point **Paper & cloth bags are better alternatives than plastic bags**
(contd...)

Counter Point **How eco-friendly is paper?**

- ✓ Globally 5th Largest Consumer of Energy
 - * 10% of All Industry Energy Consumption
 - * 4% of World Energy Consumption
- ✓ One of the Largest Users of Water
- ✓ 1 Mt of Paper (7000 - 8000 copies of News paper) 10 to 17 trees needed
- ✓ Paper cannot be recycled indefinitely; Maximum 4 Times.
- ✓ Recycling is also energy intensive and requires chemicals for bleaching / deinking
- ✓ Rated Medium in Biodegradability with Associated Hazards like leachates.

Paper imposes heavy burden on environment. If we do not ban paper, why ban plastics?

Source: The World Resources Foundation, UK



Point

Paper & cloth bags are better alternatives than plastic bags

(contd...)

Counter Point

- ✓ The smaller volume of plastic bags can help conserve landfill space
- ✓ Nothing degrades fast enough to extend the useful lives of modern US landfills ... not paper, not plastics, nothing
- ✓ 30 per cent less material is used to produce today's plastic bags than the bags made just 5 years ago
- ✓ Compared to paper grocery bags, plastic grocery bags:
 - * Consume 40 per cent less energy than paper (1.34 million MJ Vs 0.58 million MJ for 1 million bags)
 - * Generate 80 per cent less solid waste
 - * Produce 70 per cent fewer atmospheric emissions
 - * Release up to 94 per cent fewer waterborne wastes.

Source: Dr. William Rathje, University of Arizona Garbage Project, USA/German federal office



Point Paper & cloth bags are better alternatives than plastic bags
(contd...)

Counter Point How eco-friendly is cotton?

Growing Cotton

✓ One of the Most Chemical intensive Crops

✓ Contaminates

Intensive use of Soil
Fertilizers and
Pesticides

✓

Processing Cotton

Bleaching

• Contaminated
Effluents

Dyeing

• Synthetic dyes not
biodegradable,
Biodiabolic

Mercerising

• 40% remains as waste

Anti-felt Finishing

• Heavy metals cr, cu, cd

Water proofing

• Enters the food chain

Silk weighing

• Released by clothing
when worn

✓ Auxiliary Agents

• Absorbed by skin

✓ Washing for reuse

• Detergents, Solvents

When you wear cotton, you also wear Toxins.

Source: Statesman



Point

Paper & cloth bags are better alternatives than plastic bags

(contd...)

Counter Point

How eco-friendly is Jute ?

RETTING - Water Pollution

- Air Pollution
- Adverse Effect on Biota (e.g. Fish Culture)

- Microbes
- Organic Acids
- Methane Gas
- Hi Water demand

BATCHING

Use of Batching

Oil

- Contaminated Product/Content
- Odour
- Toxic Effluents
- Not suitable for Food Products

BLEACHING

Use of Chemicals

- Contaminated Effluents/Water

AIR POLLUTION

Particulars/Fibre Dust

Airborne Toxic Metals

Microbes

- Workers Health
- (Bisniosis)

Jute processing has adverse impact on environment.



Point **Plastics deplete resources**

Counter Point **Plastics Conserve Resources**

**PLASTIC –
The most resource efficient
Packaging material.**

Highest Product–Package ratio.



Point

Plastics deplete resources

Counter Point

Plastics Conserve Resources

To pack 500 grams of Coffee

Packing Material	Weight
Glass	500 gms
Tin	130 gms
Plastic	12 gms



Point **Plastics are major source of solid waste problem**

Counter Point

- ✓ In developed economies with disposable lifestyle (e.g. W. Europe) plastics contribute small amount to solid waste

✓ Total Solid Waste	: 2.8 Billion Tons
Plastic Waste	: 18 Million Tons
% to Total Solid Waste	: 0.6%

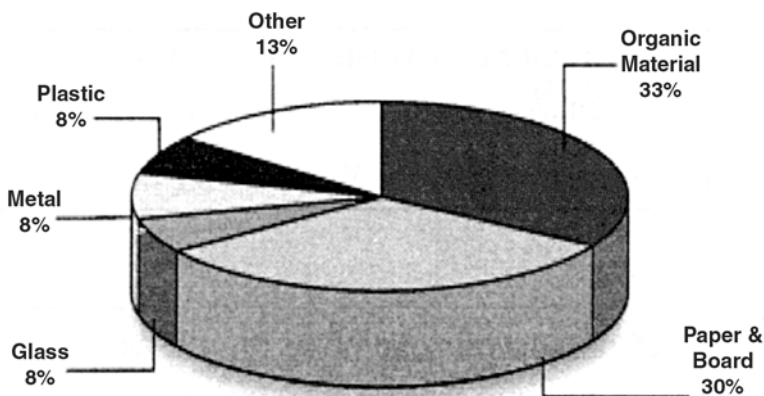
✓ Municipal Solid Waste	: 137 Million Tons
Plastic in MSW	: 11 Million Tons
% to Total MSW	: 8%

Point

Plastics are major sources of solid waste problem

Counter Point

Municipal Solid Waste Composition W. Europe



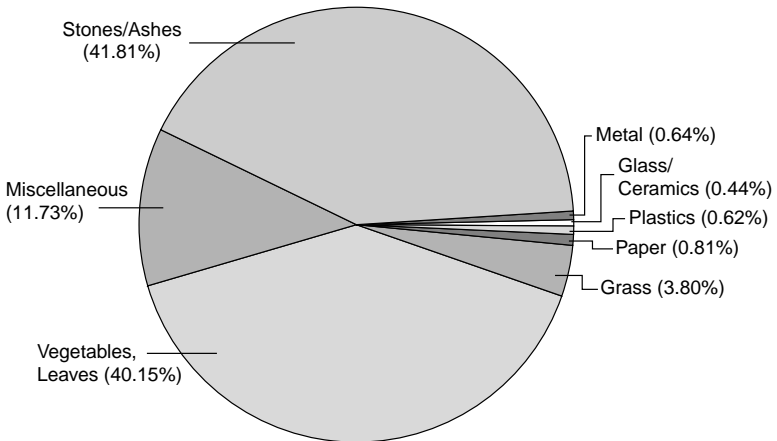
In developed economies with disposable lifestyle, plastics contribute only 8% by weight to Municipal Solid Waste (MSW). The rest consists of organic matter, paper, wood, metal, glass etc.

Point

Plastics are major sources of solid waste problem

Counter Point

Municipal Solid Waste Composition India



Source: Management of Municipal Solid Waste, Central Pollution Control Board, Ministry of Environment and Forests.

All India figure of late 90's.

Recent studies by some institutes show that Plastics constitute about 3-4% of MSW in major metros in India. However, it is estimated that All India average figure would be much lower.



Point

Plastics are major source of solid waste problem

Counter Point**Plastic waste the Indian Dimension**

	India	World
✓ Lower per capita Consumption	4.5 Kg.	20 Kg.
✓ Highest plastic recycling (Industrial & Urban)	60%	15 - 20%
✓ Lower amount of Plastic in solid waste stream	0.5 - 4%	7 - 8%

In spite of low waste volumes industry has taken initiatives on recycling.



Point

Ragpickers find thin gauge plastic bags unviable to collect causing problems in disposal

Counter Point

- ✓ Along with Ministry of Environment & Forests (MOEF) industry has taken initiative on the following:
 - * Increase the thickness of virgin carry bags to minimum thickness of 20 microns (vs 5 microns at present)
 - * Increase the thickness of recycled carry bags to minimum thickness of 25 microns
- ✓ Increased thickness / weight will provide adequate economic incentives to ragpickers to pickup waste bags & channel them into the recycling chain which is well established.

Plastic bags are already recycled into useful products like barsati films and mats.



Point

Plastic bags have no reuse

Counter Point

- ✓ The thick gauge bags are retained by consumers for multiple secondary usage over extended period of time
 - * Thereafter they are collected and recycled into very useful products like the barsati film, nursery bags, etc.

For very thin bags, industry has already accepted increasing the minimum thickness to make reuse and recycling viable.



Point Plastic bags are manufactured by 10,000 unregistered units

Counter Point

- ✓ The number of jhabla bag manufacturing units have been highly exaggerated
 - * In Maharashtra, registered and unregistered units total 1,000
 - * Maharashtra is a major centre accounting for almost 40% of entire production
 - * On all India basis, this number does not exceed 2,500 units
- ✓ Many of these units also produce other useful products from Polyethylene films
- ✓ The total number of plastic processing units (all types) in the country is only 13,000.

Plastic processing units play a vital role in national economy beside major contributions to the exchequer.



Point

Plastic bags are produced in most unsanitary conditions

Counter Point

- ✓ Virgin plastic bags are manufactured by high quality organised units whose quality products are also exported to developed countries like Germany & USA
- ✓ Recycled jhabla bag manufacturers are in tiny, cottage, small & unorganised sector
- ✓ There is a need for Govt./MOEF/local authorities to provide adequate infrastructure like recycling zone & parks with common effluent treatment facilities
- ✓ Industry is committed to upgrade technology for better products & working conditions through ICPE
- ✓ Industry is willing to work with local authorities in setting up central recycling plants / parks.

Let us support industry & enterprise. Let us not kill it by misconceived ideas.



Point Plastic bags choke drains in monsoon resulting in floods.

Counter Point

- ✓ The root cause is dumping of all types of waste by public into open sewers & drains
- ✓ Plastic bags form a miniscule % of the dumped waste. Other objects like waste tyres & rubber products, discarded footwear, metal cans, bricks, mortar and garbage have been found dumped in drains & sewers leading to chokage.

The solution lies in proper waste management & timely cleaning of sewers & drains before monsoons.



Point

Plastic / plastic bags cause litter

Counter Point

- ✓ Ultra-thin carry bags are exported from India to Germany / other countries but these are not found littered on streets due to good civic sense and supportive waste management systems
- ✓ Most countries have adopted two bin culture – segregating dry and wet garbage
- ✓ Plastics industry in India has been pleading with local governments for proper segregation systems and provision of bins
- ✓ This will help avoid littering and ensure recycling of waste plastics
- ✓ Industry has already donated plastic bins in cities like Delhi and Kolkata
- ✓ ICPE along with government is committed to launch public education campaigns to enhance civic sense
- ✓ Government should consider harsh penalties and deterrents for littering.

Infrastructure and system support is a must for proper waste management. Remember, plastics do not litter but people do.



Point Industry has not taken any initiative on recycling and waste management

Counter Point

- ✓ Conducted national and state level seminars / workshops and meets with public, NGOs, Government Departments, local authorities. Industry is committed to continuing education, awareness and multimedia communication program
- ✓ Industry has already formed **Indian Centre for Plastic in the Environment (ICPE)**, an autonomous national body registered under Societies Act, with a seed capital Rs. 2 Crores on recommendation of a Task Force constituted by the Ministry of Environment and Forest (MOEF) to handle all issues related to Plastics and Environment in the Country
- ✓ ICPE helps sustain an environment-friendly image of plastics by highlighting the positive role of plastics in conserving resources and its 100 % recyclability.

Plastic industry is a responsible and caring industry.



Objectives of ICPE

- ✓ Developing Technologies
- ✓ Applications Development
- ✓ Waste Management
- ✓ Database and Information System
- ✓ Education & Promotion
- ✓ Testing & Standards
- ✓ Life Cycle Analysis



The Common Agenda

- ✓ The plastic industry is a responsible and caring industry.
- ✓ Over the years it has taken a number of eco-initiatives in addressing environmental and socio-economic issues ... **however much more needs to be done.**
- ✓ Industry and media need to work together in a collaborative spirit to bring about proper appreciation and positioning of the unique contribution of plastics to environment and modern society.
- ✓ Industry welcomes objective, unbiased public debate as an important input to further improve its efforts in serving society and in protecting the environment. **We have a shared vision and a common destiny.**
- ✓ **Let us call a halt to the sustained misplaced anti-plastics campaign and work together for a better future**



PLASTICS AND THE ENVIRONMENT

FREQUENTLY ASKED QUESTIONS:

Q.1. Are plastics eco-friendly?

A. In general all man-made products, during manufacture, processing and disposal, have an impact on the environment. The issue therefore is, which of these products under consideration, will impose the least burden on the environment, and contribute to what is termed – “sustainable development”.

As you read-on the haze created by the media, might clear to reveal the genuine role of plastics in the environment. This is best expressed in the following quotation:

“There is a perpetual danger of thinking you can find out the truth merely by being clever. The truth is that you have to work doggedly at the facts” (Dr. Ronald Broadbent in the New Scientist – July’ 73)

Q. 2. How do we judge whether plastics are eco-friendly in relation to other materials?

A. Plastindia Foundation’s Enviroplast Committee, developed a model or criteria, which may be used for qualifying materials as eco-friendly. The material or product in question should:

- a) improve the quality of life, particularly of the economically weaker sections of society.
- b) reduce significantly the pollution load on the environment - land, water and air – in relation to materials that are replaced or substituted.



-
- c) use the non-renewable energy resources more efficiently.
 - d) contribute to the preservation of land, water resources and forests.
 - e) lend itself to recycling and/or recovery of a significant part of the inherent energy.

Normally the tendency is to judge a product or item in terms of its waste disposal problem. This is like saying that an iceberg is as big as it appears above the surface.

Every process connected with a product right from the time that basic raw materials are extracted from the earth to the time a product is produced, transported, used and disposed, has some impact on the environment. A comparative study of products or applications based on measurements of energy-input and the pollution discharged to land, water and air, at every stage, is called a Life Cycle Analysis (L.C.A.) – or more simply “the cradle to grave” approach.

Q.3. Are plastics responsible for utilising a major share of the world’s oil or hydrocarbon resources?

A. NO

It is important to recognise that plastics use less than 4% of the world’s hydrocarbon resources. Approximately 90% is consumed for transportation, power generation and heating.

In general plastic products require less energy than products made from conventional materials, at comparable use and performance levels.



Q. 4. Do plastics make-up a large part of the Municipal solid waste?

A. NO

A study conducted by the BMC in 2001, puts the figure at 0.75%.

Even in Europe and U.S.A., with per capita consumption of plastics at over 50 kgs per annum (India is 4.5 kgs per annum), plastic waste makes up 8% of the total municipal solid waste. The rest is made up of organic materials (33%) paper & board (30%) glass and metals (16%) and others (13%).

Plastics make a significant contribution by reducing the weight and volume of materials that are typically thrown away. Unfortunately in India waste is littered, instead of being disposed, to facilitate collection and recycling.

Q. 5. Do plastic grocery bags block drains during the rains?

A. Unlikely.

Plastic grocery bags are lighter (less dense) than water; hence, they float. This is why they accumulate on the beaches when disposed indiscriminately. In the case of a vertical grill in the drainage system, the water will flow through the grill with the plastic bags floating on the surface. In the case of a horizontal grill such as the one found on the roadside, the bags will be displaced by flowing water. By applying this logic, it is difficult to understand how plastic grocery bags are responsible for blocking drains. Perhaps, someone should carefully observe and determine what is the real problem.



Q.6. Are plastics toxic when used in contact with foods and medicines?

A. NO

Plastics are used world-over because they are safe for packaging of foods, medicines and child care products. A few examples are – milk pouches, edible oil container, ice-cream packs, blister packs for tablets and capsules. I.V. fluids and blood is collected and stored in plastic bags.

While plastics are safe for packaging of food and medicinal products, there are standards in each country, which specify the type of Additives and Pigments, which can be used safely for contact with foods.

Q. 7. Are plastics hazardous when buried in land-fills?

A. NO

Plastic waste is pre-dominantly eco-neutral or inert. It does not generate toxic leachates which contaminate the soil or ground water resources. On the contrary, those products which do biodegrade with by-products, may result in contaminating ground water resources.

Plastic consumer waste is easily compactible, and occupies less space in land-fills. The fact that plastic waste is inert and does not biodegrade, makes segregation and recycling a more logical approach to waste management, for urban areas.

The famous study on excavation of New York's landfills by the University of Arizona, U.S.A., reveals that food items, such as beef-stakes, corn-on-cob,



news papers – things which you might expect to biodegrade in a few years, are in recognisable form after 30 years. This is because, anaerobic biodegradation (in the absence of air and sun-light) is an extremely slow process. This process also generates methane gas from landfills – which for its “greenhouse” effect is worse than carbon dioxide.

Q.8. Does the burning of plastic generate toxic fumes?

A. NO

To a large extent, post-consumer waste is made up of grocery or polyethylene bags. The chemical structure of polyethylene is made up only by carbon & hydrogen atoms. Anyone, who has done elementary chemistry will know that burning a carbon hydrogen molecular chain will generate carbon-dioxide and water vapour.

A product made from PVC, when burnt in an open fire will emit hydrogen chloride fumes which are pungent. In fact this property has a significant advantage in retarding propagation of a flame when used as a sheath in power cables. Normally a PVC product or a post consumer pack is extremely rare, in Municipal solid waste.

The toxic fumes which the public wrongly believe are generated from plastics, are the result of burning materials contained in the bag, to get rid of industrial wastes.

Q. 9. Are plastics harmful to plant growth, when buried in the soil?

A. NO



The use of polyethylene nursery bags for growing seedlings for plantation crops or for afforestation is an application which is widely prevailing all over the world. The thin polyethylene bag holding the soil and sapling is slit with a blade and covered by soil. This way the root zone of the young sapling is not disturbed. In the conventional method the sapling had to be uprooted from a bamboo wicker basket, which increased the mortality rate of the young sapling.

Plastics are inert and their presence under the soil has no affect on the soil chemistry or plant growth.

Q.10. Should we change over from plastic to paper bags?

A. A decision should be made after considering these facts.

The wide spread belief that substitution of plastics with paper is more favourable to the environment, is not supported by facts and a L.C.A.

The manufacture of paper bags requires two-and-half times the energy as compared to plastic bags of the same size and for comparable performance.

The manufacture of paper produces significantly higher air pollutants. There is a huge disparity in waste water discharge in manufacture or recycling of paper.

As far as biodegradability is concerned, the University of Arizona study shows that newspapers buried in 1952 in land-fills and excavated in 1989, were legible. The same observation was made with telephone directories.

Some will argue that paper comes from trees which is a renewable resource; while plastic is manufactured



from oil, which cannot be replaced. The argument against this is, that forests play an important role in protecting our soil bank and maintaining the gaseous balance in our atmosphere, by absorbing carbon dioxide and in turn releasing oxygen. In our hunger for wood, 44 million hectares of forests have been felled since Independence, making this country a land with one of the lowest areas under forest cover (area under forest to total land area). Therefore, as far as India is concerned land is not a renewable resource.

Q.11. Do plastics meet the criteria of resource conservation; – do we get “more for less” while using plastics packaging?

A. YES

Let us take the example of the humble plastic grocery bag which has been denigrated so extensively in the media. A stack of 2000 plastic grocery bags will be seven-and-half INCHES high; a stack of 2000 paper grocery bags will have a height of seven-and-half feet. Imagine what this means in terms of transportation, and the increase in exhaust emissions.

A study conducted by the “German Society for Research in the Packaging Market”, shows that if plastics packaging were replaced with other materials, the weight and volume of disposables would increase by a factor of 4 and 2.5 respectively, along with twice the level of energy consumption and double the cost of packaging.

Another good example is the transport of mineral water in light weight PET bottles. A truck can carry 60% more water with 80% less packaging, as compared to glass bottles; this results in fuel savings of almost 40%.

The ratio of product weight packed to the weight of package is the highest for plastics packaging; for example 500 gms of coffee can be packed in a glass jar weighing 500 gms, or a tin plate container weighing 130 gms, or a plastic laminated pouch weighing only 12 gms. Still better, one kg of salt is packed in a pouch weighing 5 gms where the ratio of product weight to package weight is 200:1. These are some examples of getting “more from less” through plastics packaging.

Q.12. What about the role of plastics in improving the quality of life?

A. According to a UNICEF report, in our Country an estimated 2,500 children die every day of diarrhoeal diseases, caused by polluted drinking water and lack of sanitation. Those who survive, continue to suffer from water borne diseases and the country loses a staggering 1,800 million man hours per year.

The target the country has set for itself, provides one safe source of drinking water per village. Such a difficult task would be impossible to achieve without the use of PVC pipe which is economical, light, easy to transport and install, but more significantly, uses 88% less energy in terms of “oil equivalent” in its production and use, for comparable performance with GI pipes.

The growth of personal products in the rural areas has increased dramatically. The growth of shampoos in bottles is at a level of approx. 2% year-on-year, whereas the growth is around 30% year-on-year for shampoos in flexible packs of 5 to 8 ml capacity. The combination of low cost flexible packaging and the small pack size, makes a product affordable to a much larger section of the community and thereby promotes hygiene and personal care.



Q.13. What has the plastics industry done to address critical environmental issues?

A. The Indian Centre for Plastics in Environment (ICPE) which has now been formed, has a fairly long history in its making, reviewed briefly in the following paragraphs.

ICPE's Mission Statement will shortly be formally announced; its purpose will be to make plastics a preferred material in an environmentally conscious world. There are many applications for which plastics are the most efficient, functional and cost effective choice; also there are few applications for which plastics are the only choice, for example in consumer packaging. That is why it is important for ICPE to work to address the environment related concerns that can undermine plastics, its cost – performance advantages, so that the community at large benefits from this wonderful and versatile material.

In 1995, the President and the Managing Committee of Plastindia Foundation had the vision to foresee that environmental issues will become a matter of serious concern for the Industry. The Enviroplast Committee of Plastindia Foundation was formed shortly thereafter to address and respond to environmental issues with the Government and media.

The Enviroplast Committee worked diligently at gathering facts, research papers and valuable information on plastics in relation to the environment. The Committee then put together a presentation to inform the media and the Government about the issues and facts, the myths and realities on plastics and the environment. Several seminars (one in

conjunction with FICCI) were held throughout India, apart from several press conferences.

The Enviroplast Committee made a major contribution in the deliberation on the Report of the National Plastic Waste Management Task Force, headed by the Chairman of Central Pollution Control Board. The Task Force report provided plastics packaging waste management strategies relevant for India; guidelines for recycling of plastics and finally a proposal for establishing an Indian Centre for Plastics in Environment. The Enviroplast Committee also worked closely with the Central Pollution Control Board (Ministry of Environment and Forests) in drafting a Notification on thickness limitations for vest type bags (Jabla bags).

The ICPE is the newly constituted autonomous national body set up by stake holders from the Indian Plastics Industry; the promoters are the Chemicals and Petrochemical Manufacturers Association and the Plastindia Foundation. It has an independent Governing Council and Management Committee of eminent members in the industry, the Government, Research Institutions and academicians.

The ICPE will work on all aspects of long term plans and issues concerning plastics, plastic waste recycling and environment. It will address issues of communication, education, technology upgradation in plastic waste recycling and help improve plastics waste management in India. It will actively interact with the media, ministries and government departments, civic authorities, the NGO's, the Educational institutions, Societies and various industry associations connected with plastics.



Q.14. Who should take responsibility for the plastics environmental issue?

A. We all share the responsibility for environmental issues. Any issue which concerns the community, has to be resolved with the co-operation of all involved; it is a “shared responsibility”. Those involved are Government, Municipalities, the raw material manufacturers, the converters, the food and personal product manufacturers, the retailers, and consumers.

Because domestic waste is a mixture of materials of which plastics is only a small component, under 2% by weight, it is the responsibility of government to manage waste and to regulate its disposal.

It is the responsibility of the plastics raw material and packaging manufacturers to come up with the most cost-efficient solutions, which will preserve and protect goods, minimise the use of energy and reduce the weight and volume of waste. Food and personal product manufacturers, retailers and consumers need to be aware of the benefits of plastics packaging and the need to dispose plastics in a manner which leads to increasing emphasis on recycling.

Everyone must understand that the environmental legacy we leave behind for future generations will depend on our resolve to:

REDUCE – REUSE – RECYCLE

And finally let us agree that:

PLASTICS DO NOT LITTER, PEOPLE DO.