

NEWS LETTER

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Plastics: Boon or a Curse

Plastic is a “synthetic or semi synthetic material, which contains an essential ingredient a high polymer such as polyethylene terephthalate, high density polyethylene, Vinyl (PVC), low density polyethylene, polypropylene, polystyrene resins, multi-materials like acrylonitrile butadiene styrene (ABS), polyphenylene oxide (PPO), polycarbonate (PC), Polybutylene terephthalate (PBT) and which at some stage in its processing into finished products can be shaped by flow”.

It has extreme versatility and ability to be tailored to meet specific technical needs of the mankind. This wonderful material was invented by man and was thought to be a boon due to its excellent durability, resistance to chemicals and water, lighter in weight than competing materials, easily transported with reduced fuel consumption, good hygiene for packaging food and beverages and relatively inexpensive to produce.

However, the boon is turning into a curse. The benefits of plastic in terms of its low weight and cost have led to a situation where the environmental impacts due to the increased use of plastic is often ignored in view of the economic benefit. However, the unrestricted and unregulated use of plastics for the purposes of packaging, which includes polyethene terephthalate (PET) bottles and multilayer packaging's (has combination of more than one layer of materials such as paper, paper board, polymeric materials, metalized layers or aluminium foil, either in the form of a laminate or co-

extruded structure) for various essential and non-essential items including but not limited to water, milk, liquor, soft drinks, juices, hair oil, shampoo, powdered food items, etc., which has significant health and environment impacts.

Facts and Statistics

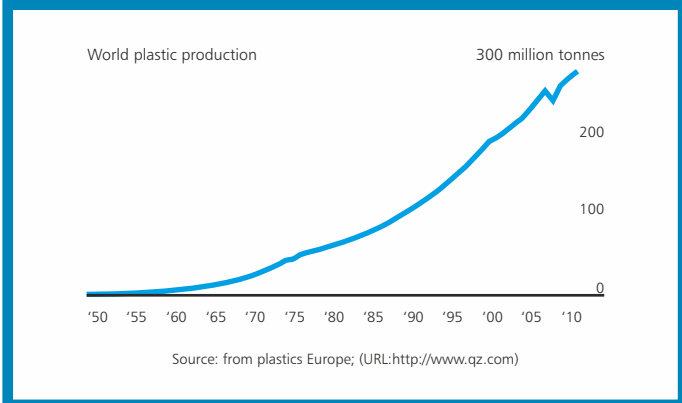
There are certain facts and statistics about plastics health and environmental impacts as follows-

- Plastic production is taking place since the day it was invented in 1868. Its production is unsteadily increasing from 1940s as shown in figure 1. Data released by the United States Environmental Agency (USEPA) shows that somewhere between 500 billion and a trillion plastic bags are consumed worldwide each year.
- Once plastic is produced it takes 400-1000years to decay. Thus it has a permanent impact because of its non-biodegradable nature and non-disintegrating properties by natural action of bacteria, enzymes or other biologically and naturally occurring organisms. Therefore, if plastics enter the environmental stream it will take millions of years to completely vanish away.
- Plastic is becoming the part of waste stream since 1971, and its quantity has increased almost 15 times in the composition in MSW till year 2010.



- According to the “Assessment and Quantification of Plastic Waste in 60 Cities Study” conducted by the Central Pollution Control Board (CPCB) through the Central Institute of Plastics Engineering and Technology (CIPET), Ahmedabad, during the year 2010- 11, the total quantum of plastic waste generated in the country is estimated to be about 15,342 MT per day. Out of the total plastic waste generated daily in the country only 60% (9250MT) is collected and recycled and the remaining 40% (6137MT) remains uncollected.

Figure 1: World total plastic production



- The uncollected plastics are mostly poly bags, which are even hardly recycled (less than 1%) and find their way either into drains and choke them or get dredged in the soil and making the land infertile; or into rivers, open lands, parks, railway tracks and coasts where animals and birds ingesting them by mistaking as food and die after. These littered wastes are mixed with other wastes, especially with municipal wastes thereby making it difficult for segregation.

- Interestingly, less than 1% of poly bags are recycled due to higher cost of recycling a bag than to produce a new one due to its low density, higher cost of collection and transportation. These recycled plastic if used again, can cause major harm to human health as the contaminated recycle leach toxic hydrocarbons such as pesticides, fertilizers, lubricant oils, paints and heavy metals such as lead, mercury, chromium and cadmium, which are carcinogenic, into the edible contents packed in them even at room temperature. Further, these plastic bags photo-degrade over time and break down into smaller, more toxic petro polymers, which eventually contaminate soil and waterways, as a consequence microscopic particles can enter the food chain and affect the health of the ecosystem.

- Plastic has a dangerous leaching tendency. The long storage of liquids, which is acidic in nature, and continued exposure to plastic surface causes some detrimental compounds to make their way into the stored product and pose a grave and serious risk to the lives of people who consume such liquor / intoxicants packed in such PET bottles and plastic pouches. Further, easy availability in PET, plastic pouches and multi-material packaging, through easy transportation, encourages manufacture and consumption of such carbonated soft drinks and spurious/cheap liquor.

- Poly-Al is completely non-degradable and emits toxic fumes on burning. It can cause infertility of soil, if it gets imbedded in it, reducing permeability, porosity and fertility of the soil.

- That various Rules and regulations at the State and the Central Government level recognize the environmental impacts of plastics. The Plastic Waste (Management and Handling) Rules, 2011 impose certain conditions for manufacturing, distribution, disposal and recycling only of plastic carry bags and sachets, including multi-layered packaging materials. Despite the fact, the regulatory response is been mostly confined to a very limited category of products. Use of plastic, especially for packaging of nonessential and harmful consumables, is continuing in unregulated and unabated manner.

- Plastic production consuming 8% of the world's oil production with 4% as feedstock and 4% during manufacture.

Insight

Looking at the irreversible impacts of plastics on environment, ecology and human health, Him Jagriti, an NGO based in Dehradun initiated a mass movement against the indiscriminate use of plastic packaging of various products. The NGO has submitted a PIL before Hon'ble National Green Tribunal (NGT) under section 14 of NGT Act, 2010 to draw attention of this Hon'ble Tribunal to the harmful effects of the plastic bottle packaging and multilayered packaging such as Tetra Pak, etc. and requesting to either ban them or restrict their use. The appellant organizations is also making representations before various authorities at the State and Central level drawing attention to the harmful effects of using plastic in packaging.

Now the question is, “what decision the NGT should

take? There are two options in front; either to ban plastics or to strictly implement the "4R" concept.

If NGT decides to go for banning the plastics, it's the easiest way. But do we have other environmentally sustainable alternative material to replace plastics? Any material, which has qualities of corrosion resistance, low electrical and thermal conductivity, having insulator property, can be formed, casted and joined easily into complex shapes with wide choice of appearance, colors and transparencies? If such material is available, is it economically viable and convenient to use as plastic is?

Many countries across the world and some states in India (e.g. Himachal Pradesh, Punjab, Maharashtra, Goa, West Bengal, Rajasthan etc.) have already banned the plastic bags but no other packaging materials due to the reasons mentioned above.

Analyzing the current debate on plastic as a boon or a curse, Indian Pollution Control Association (IPCA), who has past 15 years of experience to work in field of SWM, has conducted a survey of about 400 rag pickers in Delhi NCR to study their understanding about plastic waste and take their perceptions on ban of plastics.

Looking not from the environment angle but the social angle, this issue is all different. The survey conducted for rag pickers who play a significant role in SWM in India revealed their perception about plastic banning. Plastics such as PET bottles, multilayer packaging materials, mainly Tetra Pak carton for food and beverages should not be banned. According to the rag pickers, these plastics are the most valuable item in the waste stream they collect. This plastic waste contributes nearly 28% of the total recyclable waste they collect daily and it contributes almost 37 to 40 % of their total income coming from selling of the recyclable waste materials. Their total average monthly income is told to be approximately Rs. 7000/-, which will drastically reduce to Rs.4000-4200/- monthly.

Rag pickers are the poorest people of Indian society who are doing rag picking just because of attractive income by selling the plastics in the waste and are compromising with their health and life. If plastics will be banned, they will prefer to quit collecting the waste and look for other alternative works, which is again a challenge for society. There are approximately 10 million rag pickers working all over India. Out of which 3 lacs are working in Delhi NCR. Each rag picker serves almost 280 households daily and collects 300 Kg of waste. That means these 10

million rag pickers pick up approximately 0.3 million tons of waste daily across the country. If these rag pickers will stop collecting the waste, there will be a huge crisis for collection and segregation of the waste and further supply of other recyclable materials to the recycling industry. This all may lead to unsustainable condition with respect to health of the people, income of industries, like tourism departments and may impact the GDP of the country.

IPCA had discussion with higher officials from all state pollution control boards and pollution control committees (chairman and secretaries) in India during a consultation meeting on draft plastic waste management rule, 2015. Ninety percent of the states were in favor of banning the plastic bags irrespective of their thickness (as per new draft plastic waste management rule 2015, the minimum allowed thickness of plastic bags increased from 40 micron to 50 micron). However, no state was in opinion of banning the PET bottles and multi-layered plastic packaging's as alternatives available are either limited or costlier to use or not so much user friendly.

Considering all the aspects in current situation of unavailability of other alternative to replace these packaging materials and the waste management system of India, which is primarily dependent on waste collection by rag pickers in most of the cities, is banning these plastic material a smarter solution?

It seems to be inappropriate in current circumstances to ban the plastic packaging materials except the plastic carry bags. So, now we are left with the second approach, i.e. to strictly follow the '4R' approach. As we all understood by now that the unnecessary and excessive use of the plastics is the main culprit to turn this boon into a curse. Secondly, improper management, handling and disposal is causing a nuisance for environment and health of the ecosystem. 4R approach will not only address the issue in terms of disposal and recycling, but also to reduce the use of plastics by saying 'No (refuse)' to plastics in the first place, especially where healthier and environmentally sustainable alternatives are available.

At the end we can explain in two three lines about the 4R (reduce, reuse, recycle, recover) concept in SWM context.



Promising Approach

1. Creating awareness among people regarding the impacts of plastic use on their health and environment through mass awareness campaigns and media support.

2. The problem of plastic waste is mainly due to inefficient collection system. 40% of the plastic waste remains uncollected, which creates hazard to the environment. Therefore there is a dire need for 100 % plastic waste collection system.

3. Most of the plastics are recyclable. However, due to improper segregation system, great amount of plastic goes to landfill site. Efficient waste segregation system will be able to help in solving the problem of plastic waste up to a great extent.

4. It is very disturbing to note that plastic recycling in India is carried out by small, unauthorized units in a completely unregulated manner leading to the manufacture of highly contaminated and hazardous plastic. Hence, it is the prerequisite that recycling units should be regulated and monitored for their authorization by state pollution control boards (SPCB)/state pollution control committees (SPCC). Every recycler should submit the reports regularly (monthly or bimonthly) to SPCB/SPCC regarding their waste collection and recycling operation

5. The SPCB/PCC should not renew their registration for manufacturing or recycling units unless the unit possess a valid consent under the Water(Prevention and Control of Pollution) Act, 1974(6 of 1974) and the Air(Prevention and Control of Pollution) Act, 1981(14 of 1981) and certificate of registration issued by the District Industries Center(DIC) (as per MSW Rule, 2000)

6. As per Plastic Rule 2011, recycled plastics should not be used as packaging material for food stuff. Unfortunately, the practice is still continued. Hereafter, it needs to be strictly ensure of not to use them for packaging food stuffs due to their adverse health impacts. Further, it also needs to be ensure that the use and disposal of plastic is properly regulated and the use of plastic, including plastics bottles and plastic based multi layered packaging material for non-essential purpose is restricted because of its impact on health and environment.

7. Studies on a framework for promoting clean recycling policy for packaging waste should be developed by using Life Cycle Analysis (LCA) methods (as per Khwaja Committee report)..

8. Proper recycling needs to be there and instead of using the recycled plastic for packaging the food and beverages, alternatives usage like making T-shirts from recycling the PET bottles or furniture by recycling the multilayered packaging material like Tetra Pak contains Poly Al.

9. No carry bags shall be made available free of cost by retailers to consumers. The concerned municipal authority may by notification determine the minimum price for carry bags depending upon their quality and size, to encourage their re-use so as minimize plastic waste generation (plastic waste management rule, 2011)

10. Polluter pay principal should be strictly implemented to prevent the unsustainable growth of plastic waste.

Last but not the least, a coordinated approach is required by all stakeholders, i.e. manufacturers, consumers, collectors, re-cyclers as well as civic authorities for sustainable plastic waste management and for ensuring that the plastic will not again turn into a curse for civilization.

