

Plastic Peril – A Threat to Bio Diversity



Samir Kumar Mukherjee
Principal,
Bankura Sammilani College,
Bankura, West Bengal, India



Somnath Mukherjee
Ph.D. Student,
Dept.of Information System &
Decision Science,
Lousiana State University,
Baton Rouge, USA

Abstract

Plastics are used but their use and disposal should be bound by a strong policy. The question of banning the use of plastic has triggered off a debate on the production, use and ultimate disposal of items made of plastic in India. Some states like Himachal Pradesh, Haryana and Goa have already passed legislations banning their use.

From the 1950s upto 2018 an estimated 6.5 billion tons of Plastic has been produced worldwide. Out of this, an estimated 9% has been recycled and another 12% has been incinerated. The large amount of Plastic waste inevitably enters the environment. It is studied that 9% of Seabirds contain Plastic debris. Some researchers suggest that by 2050 there could be more plastic than fish in the Oceans by weight. In some areas there have been significant efforts to reduce the preminence of Plastic Pollution through reducing Plastic consumption and Promoting Plastic recycling.

In respect of waste management we do not have a scientific plastic management policy and a definite Programme based on that policy. In the US and European countries only 15% of the plastic waste is recycled by using Proper technology. The major portion is incinerated. Thus incineration through high quality emission controls is a far better method of treating plastic waste as compared to dumping them into landfills. It is a source of renewable energy too. China has gone ahead with plans to incinerate 03 million tones of solid waste, rich in plastic to provide sufficient quality of energy annually and met to some extent, its Power storage.

Keywords: Biodegrade, Biodiversity, Recycle, Plastic Pollution, Solid Waste, Polymerization, Plankton, Toxic, Wildlife, Incineration.

Introduction

Plastic, the wonder material is a Synthetic Polymer made from Phenol and formaldehyde. It was first invented by Leo Hendrik Backeland, a Belgian born American Scientist in the year 1907. This innocuous and convenient material is now raising havoc on natural life. It is estimated that 40% of plastic is used only once while nine million tons of plastic end up in the ocean every year. A plastic bag used for only about 15 minutes and afterwards it is discarded without much thought. According to scientists it takes at least 450 years to biodegrade into constituent molecules. Plastic production which has now exponentially increased throughout the world was estimated at 448 million tons by 2015. Most of these plastic materials descend to the ocean endangering the marine life. Now-a-days the most serious plastic pollution is caused by Polyvinyl Chloride (P.V.C.). When any food material or blood is stored in the said plastic containers then gradually the soluble chemical gets dissolved in them causing death due to cancer and other skin diseases. It is reported that globally 18% of plastic is recycled with highest contribution by Europe which stands at 30%. Every year June 5 is observed as world Environment Day to raise awareness against pollution. Government should increase action on this pressing issue.

Production and use of Plastic started after World war-II. Now plastic is widely used occupying every space, everywhere in various forms and shapes.

In the year 2015 world produced 448 million tons of plastic that was more than twice as much created in 1998. China makes largest amount of Plastic followed by North America and the Europe. In India about 178 million tonnes of plastic was produced for house use during 2018. Plastic is hugely used on one hand and on the otherhand it is made quick waste immediately.

Food chain is affected mostly by the problem of plastic all over the world. Sea Turtles are killed by the amount of rubbish and so is affected the wildlife.

Our plastic problem will not spare us if we don't adopt responsible means of waste disposal before the world witnesses another patch around us. Our disposal methods need to be more effective at the individual level because charity begins at home.

The objective of this study is to create an all round awareness among the people about the ill effects of plastics on the biodiversity and subsequent getting rid of these ill effects through non-uses of

Photo-plate 1 (Packaging of water and different food items in plastic containers/Bags)



2. Used in cars, two wheelers for clothing usually as polyester and other microfiber materials.

Advantages:- (i) Plastic is light in weight. (ii) Can be easily moulded and have excellent finishing. (iii) possesses very good strength and toughness (iv) Possesses good shock absorbing capacity. (v) It is corrosion resistant and chemically inert. (vi) It has low thermal expansion of co-efficient and possesses good thermal and electrical insulating property. (vii) It is water resistant and possess good adhesiveness. (viii) It is strong good and cheap to produce. (ix) It does not decompose. (x) Plastic bottles can be redused and restored over again and again. (xi) It is unbreakable, odourless and used for building construction also. (xii) Used to reduced soil and wind erosion.

Disadvantages

(i) It is nonrenewable resource. (ii) It causes cancer. (iii) It is brittle at low temperature. (iv) Produces toxic fumes when burnt. (v) It is deformed under load. (vi) It is low heat resistant and has poor ductivity. (vii) it is combustible. (viii) It can be recycled, but, process is very costly.

Types of Plastic

According to density following are the different types of plastic with their specific chemical composition and items made out of them:

PETE – Poly Ethylene Terephthalate

Bottle, Medicine container, comb, Rope etc.

Through the process of recycling carpets, Jacket, Shoe, Luggage bag can be made out of this plastic.

HDPE – High Density Poly Ethylene

Milk Pot, Shampoo container, Toys, Lumber Fencing etc.

PVC – Polyvenyl Chloride

Plumbing pipes, window Frame, Sewage pipe.

plastic as far as practicable thus saving our mother earth.

Use of Plastic – Advantages & Disadvantages

The manifold uses of plastic are as follows:-

1. Packaging things like plastic bottles, consumer goods of all kinds, cellophanes, refrigerators, construction materials and pipes etc. Over 35% of the plastic produced is used for packing like water bottles.

LDPE – Low Density poly Ethylene

Sandwitch bag, Sauce & Honey bottle, Bags for frozen food etc.

PP – Polypropelin

Plastic diper, Tiffin boxes of various types, Marjarin tub etc.

PS – Polystyryn / Styrofom

Food Box, Packing Fom, Plastic cutlery etc.

Besides the above, Polycarbonate, Acrylic Fiber group, Nylon also fall in this group of plastic.

Categories of plastic debris

Primary Debris

Plastics are in their original form when collected e.g. Bottle caps, cigarette butts, microbeads.

Secondary Debris

These account for smaller plastic that have resulted from the degradation of Primary plastics.

03 major forms of plastic that contribute to plastic pollution are i) Microplastics ii) Mega Plastic and iii) Macroplastics.

Mega and Micro plastics have accumulated in highest densities in the Northern Hemisphere concentrated around urban centres and water fronts.

Both mega and macro plastics are found in packaging, foot wear and other domestic items that have been wasted off of ships or discarded in land fills.

Microdebris

Plastic pieces are to 5 mm of 2 mm in size commonly referred to as nurdles. These are recycled to make new plastic items, but they easily end up in ocean waters through rivers and streams because of their small sizes. Microdebris that come from cleaning and cosmetic products are also referred to as scrubbers which are consumed by filter feeding organism.

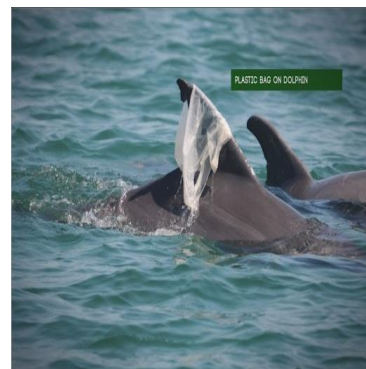
The micro- plastics can accumulate in oceans and allow for accumulation of persistent Bio-accumulating Toxins such as DDT & PCBs which are

hydrophobic in nature and can cause adverse health effects.

Macrodebris

It is larger than 20 mm in size. e.g. plastic Grocery Bags. These are often found in ocean waters and can have a serious impact on native organisms.

Photo-plate 2 (Marine animals caught in the abandoned plastic macrodebris)



Two common forms of waste collection:

Curbside Collection

People place designated plastics in a special bin to be picked up by a public or private hauling Company. More than one type of plastic resin usually both PETE & HDPE are collected. [e.g This form is available to 63% of the United States Population (193 Million People)]

Drop-off Recycling Centers

People take their recyclables to a centrally located facility. Once collected the plastics are delivered to a Materials Recovery Facility (MRF) or handler for sorting into single resin streams to increase product value. The sorted plastics are then baled to reduce shipping costs to reclaimers. (e.g. overall plastic recycling rate was approximately 8% in the United States. Approximately 2.7 million tons of plastics were recycled in the U.S. in 2011.)

A new model called 'Loop' to collect packaging from consumers and reuse has begun from 21st May, 2019. Consumers will drop the package in special shipping totes and then a pick up will take it. Partners include Procter and Gamble, Nestle, Pepsico, Unilever, Mars Petcare, The Clorox company; Coca-cola, Mondelez, Danone and other firms. The target is not only stop single use plastic but to stop single use generally. But even durable plastic is not used in contact with food.

Thickness of Plastic Carry Bags

Plastics do not degrade thin or thick. Biodegradable plastics degrade. The thinner the plastic, the easier or faster is the degradation. Thickness of plastic with 50 micron rule is not significant. The logic behind it is two fold.

1. Thicker plastic bag is more expensive (5 times more expensive). So, people are supposed to use less of it. One 50 micron bag has 05 times the plastic of five 10 micron bags. Unless the

Fishing nets have been Prime Pollutants. Even after they have been abandoned they continue to trap marine organisms and other plastic debris. Eventually, those abandoned nets become too difficult to remove from the water because they become too heavy, having grown in weight upto 6 tons.

usage is reduced less than 05 times introduction of same amount of plastic takes place in the environment.

2. The whole system of recycling of plastic is dependent on rag pickers, specially in our country. A 50 micron bag is more attractive for rag pickers compared to a 10 micron bag. In reality the rag pickers prefer to collect bottles and metals. The bags are least preferred.

Why Plastic is Harmful

Plastic Affects Human Health

The toxic chemicals leached out of plastic are found in blood and tissues of ours. Cancer is caused by exposure to them. Birth effects, impaired immunity and endocrine disruption and other ailments are also caused when exposed to them. When any food material or blood is stored in the plastic container the soluble chemical gradually gets dissolved in them causing death due to cancer and other skin diseases.

Plastic Never Goes Away

Plastic never biodegrades and breakdown into smaller and smaller pieces.

Ground Water Is Spoilt By Plastic

The toxic chemicals from plastics drain out and seep into ground flowing downstream into lakes and rivers.

Other Pollutants Are Attracted By Plastics

The toxic chemicals that leach out of plastics can accumulate other plastics. The chemicals that give the plastic rigidity and flexibility (e.g. Flame retardants, Bisphenols etc.) are only poisons that repel water and stick to petroleum based objects like plastic debris etc.

Plastic Threatens Wild Life

The wildlife in most cases mistake plastics as food and feed their young also. It is found littered in extremely remote places of the earth.

Photo-plate 3 (Erroneous selection of plastic debris as food by different animals)



Piling of Plastic in Environment

Out of Discarded Plastics, a small percentage is recycled while major portion ends up in land fill. Plastic thrown on land can enter the drainage lines and chock them resulting into flood in local areas in cities as was experienced in Mumbai, India in 1998.

Moreover the Stagnation of sewage Paves the way for mosquitoes which leads to the spread of various diseases. Plastic dumped on the soil prevents water percolation into the water table. It affects the very structure of the soil.

Jellyfish eating fishes mistaking the plastic floating in the water for Jellyfish eat them and then die. Thus the species are becoming extinct. Cattle eat plastic and die as a result thereof.

Death of Animals Due To Plastic Bags

Photo-plate 4 (Showing the death of animals caused by the plastic eating)



It is estimated that about 1.00 Lakh animals like cows, dogs and penguins are killed every year due to plastic bags, mistaking them for food and therefore die. The ingested plastic bag remains intact even after the death and decomposition of the animals. Thus the same lies around the landscape

Effect on Marine Animals

Photo-plate 5 (Sea Animals Becoming Sad Victims of Plastic Debris)



A recent US report concluded that about 1.00 Lakh marine mammals die every year in world's oceans by eating or becoming entangled in plastic rubbish and the position is worsening.

Worldwide **75 marine bird species** are known to eat plastic articles. This includes 36 species

where another victim may ingest it. In India it was claimed in one of the programmes on TV Channel that eating plastic bags results in death of 100 cattle per day in U.P. in India. In the stomach of one dead cow, as much as 35 Kg of plastic was found.

found from South Africa. A recent study of blue petrol chickes at South Africa's remote Marion Island showed that 90% of chicks examined has plastic in their stomachs apparently fed to them accidentally by their parents. Plastics may remain in the stomachs, blocking digestion and possibly causing starvation. As

particular species seem to be badly affected this may be a threat to the entire population of these birds.

Scientists from the National Marine Laboratory concluded in 1980s that plastic entanglement was killing upto 40000 seals a year. This amounted to 4 to 6% drop in seal population beginning in 1976. In 30 years a 50% decline in Northern Fur Seal population has been reported.

Royal terns are among several species sea birds while diving from the air to the water to catch fish, wish their sharp beaks its bill penetrates the plastic and leave the bird wearing the bag around its sneek like shroud. It comes problem to terns to dive in and catch fish. They die due to starvation.

Some species of sea turtles often mistake plastic bags for their natural prey in place of jelly fish. This plastic debris can kill the sea turtle by obstructing the oesophagus. Baby sea turtles are often particularly valuable according to a 2018 study by Australian scientists. Large amount of plastics have been found in the stomachs of beached whales. Plastic debris started appearing in the stomach of sperm whale since 1970 and has been noted to be cause of death of several whales.

Plastic Effects on Human

Plastic have potentially harmful effects as chemical additives are used during plastic production. This could prove to be carcinogenic or promote endocrine disruption. Some of the additives are used as phthalate plasticizers and brominated flame retardants. Humans can be exposed to these chemicals through the nose, mouth or skin.

Some of the chemicals used in plastic production can cause dermatitis upon contact with human skin. It can also affect humans in which it may create an eyesore.

Exposure to chemicals such as BPA have been corelated with disruptions in fertility, reproduction, sexual maturation and other health effects.

Gene expression is affected by Bisphenol A. It is related to thyroid hormone axis which affects biological functions such as metabolism and

development of BPA can decrease thyroid hormone receptor (TR) activity by increasing TR Transcriptional corepressor activity. By affecting the thyroid hormone axis BPA exposure can lead to hypothyroidism. BPA can disrupt normal physiological levels of sex hormones. Endocrine disruptor chemicals (EDC's) are added to plastic products to make them soften and easier to handle. The BPA (Bisphenol A), an endocrine disruptor when absorbed by human beings and wildlife mimic the action of hormones and have been linked to reproductive problems in animals and human being. This BPA ia a key monomer in production of Polycarbonate plastic and epoxy resins. Polycarbonate plastic which is clear and nearly shatter proof is used to make a variety of common products including baby and water bottles, sports equipment, Medical and dental devices, dental composite (white) fillings, and sealants and lenses.

Moreover, some of the constituents of plastic such as Benzene are known to cause cancer. Recycling of plastic is associated with skin and respiratory problems, resulting from the exposure to and inhalation of toxic fumes especially hydrocarbons.

Effect on Food chain

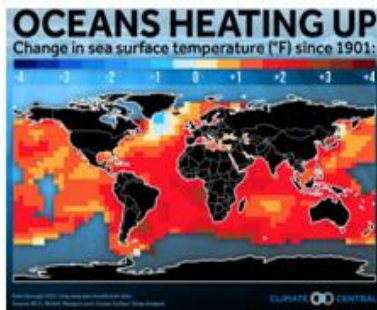
Food chain is affected mostly by the problem of plastic all over the world. With the increased concentration of plastic, it moves up into the food chain. The fishes consume it and subsequently when fishes are consumed by human the latter becomes victim of a number of diseases like cancer. So, plastic plays the role of villain right from the stage of its production.

Effect on Climate Change

A new report has recently been published in 2019 on 'Plastic and climate'. According to this report plastic will contribute greenhouse gases in 2019 in the equivalent of 850 million tons of CO2 to the atmosphere. In the current trend annual emissions will grow to 1.34 billion tons by 2030 and by 2050 plastic could emit 56 billion tons of Green house gas emission, as much as 14% of the earth's remaining carbon budget.

Photo-plate 6

The Smokes Emitted Through Incineration of Plastic Debris Causes Serious Toll On The Climate Change



By 2100 it will emit 260 billion tons more than half of the carbon budget. Those are emissions from production, transportation, incineration, but also effect of phytoplankton.

Chlorinated plastic releases harmful chemicals into the surrounding soil which can then seep into ground water of other surrounding water sources. Serious harm is caused to the species that drink the water.

Effect on Land and Tap Water

A study had been made in 2017 which discloses that 83% of tap water samples taken around the world contained plastic pollutants. It showed that

93% tap water in the United States was the most polluted followed by Lebanon and India. While the European countries like UK, Germany, France had the lowest contamination rate though still as high as 72%. The analysis found that presence of nanoparticles or particles of more than 2.5 microns in size is affecting human health.

Still plastic tap water pollution remains under studied as are the links of how pollution transfers between humans, air, water and soil.

Control of Plastic Pollution

As plastic products create litter, hurt marine life and threaten the basis of life on the Earth following are some steps that we can take to reverse the tide of toxic, non-biodegradable pollution, so that, it may not overtake our planet:-

1. Use of wax paper bags, cloth napkins, or re-useable sandwich boxes (eg tiffins) .
2. Use of only glass bottles or coins, stainless steel food container instead of plastic bags.
3. Eco-friendly packaging choices should be looked for eg buying of greeting cards in paper boxes instead of clear plastic shells, wrapping of flowers by Florists with paper not by clear film, use of pens that re-fill instead of land-fill.
4. Support re-cycling schemes and promote support for one in your local area:
5. Waste line, Net or plastic litter should not be thrown away by Fishermen as these cause huge suffering and many deaths.
6. Never dispose off plastic in the sewage system because litter generates litter.
7. Dispose off plastics at the beach or other places in the bins provided. If these facilities are inadequate, contact the local authority responsible for this and lodge a complaint.
8. Never throw plastic or other litter on the street out of your car and do not drop it on the pavement or in the gutter.
9. Create all round awareness against the ill-effects of indiscriminate plastic use. International organizations have also been raising awareness of plastic pollution. Artist Maria Cristina Finucci founded the Garbage patch state at UNESCO (Paris) in front of Director General Irina Bokova on 11th April, 2013 in order to create awareness against the use of plastic. A series of events have occurred under the patronage of UNESCO and Italian Ministry of the Environment.
10. Biodegradable and degradable plastics have helped reduce plastic pollution. But one disadvantage is that they do not break down very

efficiently in natural environments. The degradable plastics that are oil based may break down into smaller fractions at which point they do not degrade further.

11. Incineration – Used plastic medical equipment (upto 60%) is incinerated rather than deposited in a land fill as a precautionary measure to lessen the transmission of disease. This has allowed for a large decrease in the amount of plastic waste that stems from medical equipment. If plastic waste is not incinerated and disposed of properly a harmful amount of toxins can be released and dispersed as a gas through air or as ash through air and waterways.
12. Plastic – Eating Bacteria and Enzyme- A bacteria is capable of eating plastic and potentially breaking it down into harmless by-products. Japanese Researchers had discovered a naturally occurring bacteria known as *Ideonella sakaiensis* appearing to feed exclusively. On a type of plastic known as PET (Polyethylene Teraphthalate) used in plastic bottles, scientists found cutinase along with PE-Tase in fungus and Bacteria enabling full recycle of plastic. Now, researchers are working on further improvement of the Enzyme for individual use.

Some Positive Steps As Taken In India and Other Countries for Reduction of Plastic Use India

1. India in 2018 hosted 43rd world Environment Day on 5th June and the theme was 'Beat Plastic Pollution with focus on single-use or disposable plastic. The Ministry of Environment, Forest and climate change in India invited people to take care of their social responsibility and urged them to take up green good deeds in everyday life. Several states have presented plans to ban plastic or drastically reduce its use. The Government of India has written to all the States and Union Territories to start massive campaign against the single use of plastics and the use of carry bags of less than 50 microns in thickness illegal.
2. The Ministry of drinking water and Sanitation, Government of India has requested various government departments to avoid the use of plastic bottles to provide drinking water during government meetings etc. so as to avoid generating plastic waste.
3. The state of Sikkim has restricted the usage of plastic water bottle (in government functions and meetings) and Styrofoam products.

Photo-Plate 7

All Round Awareness Programme to Save Green, Fighting Plastic Pollution

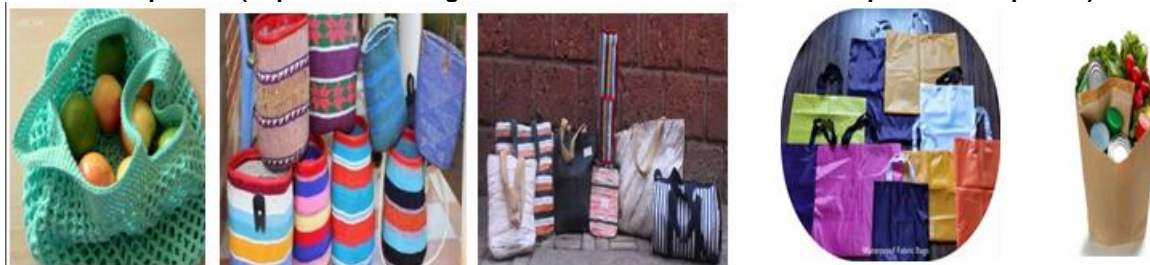


4. The state of Bihar has banned the usage of plastic water bottle in government meetings.
5. India effected the Maharastra plastic and Thermocol products ban on 23rd June, 2018 subjecting plastic uses to fires and potential imprisonment for repeat offenders. A Buy Back Mechanism has been introduced In Maharastra. About 2400 tons of plastic waste is generated each day. During the span of 15 years 131.4 Lakh tons have been generated. To tackle the problem Maharastra Government has introduced a buyback scheme for waste plastics like that being implanted in 40 countries overseas including US, Germany, Norways etc. Under the scheme manufacturers should charge a refundable amount from the purchaser for the bottled and pouched product of plastic.

The deposit will be refunded once the bottle is deposited with the retailer or with the reverse vending machine. Onus of collecting and recycling PET (Polyethylene terephthalate) bottle and milk pouches lie with the manufacturers. Recycling has been making licence norms in the plastic waste management Rules 2016.

Top beverage maker like coca-cola, Pepsico and Bisleri have been printing buy back value on PET bottles sold in Maharastra. A consumer must return PET bottles and pouches to claim deposit instead of littering them on land or in rivers which

Photo-plate- 8 (Paper & fabric bags and other items used as alternate provision of plastic)



The UP Governor passes ordinance for banning plastic below 50 microns. The newly constituted Matikala Board in UP is promoting use of Kulhads (clay cups) as alternative to plastic cups. State Government will make available land pattas, free electricity and free transfer of technology to artisans besides waiving

would be punishable offence. The rate of deposits suggested are Rs. 1/- per bottle of a litre or more, Rs. 2/- per bottle from 200 ml upto a litre and 50 paise per milk pouch. The recycled plastic will be used for industrial fuel and Road Building etc.

6. The city of Banglore in 2016 banned the plastic for all purpose other than for few special cases like milk delivery etc.
7. The West Bengal Pollution Control Board has banned manufacture, sale and use of plastic carry bags in ecologically fragile areas viz. the entire Sunderban areas, Hilly areas of Darjeeling District, CRZ areas (Digha Sagar, Bakkhali etc) Action has been initiated for public awareness (Trainings and workshops) for plastic waste management such as proper disposal of plastic bottles, use of cloth/ Jute bags etc.

The alternate to plastic bags are paper bags, jute bags and cloth bag. Paper, jute and cloth are eco-friendly. Jute bags are more suitable substitute than paper and cloth, because it is cheaper than cloth and reusable though paper bags are cheaper than jute bags but less durable. The West Bengal Government intends to make use of jute bags mandatory through suitable legislation as decision has been taken to ban plastic bags in Kolkata and other prominent towns and cities in the state.

off all the taxes. This will be environment friendly measure as also will provide economic benefits to the potters community, numbering about 2 crore of the UP's population.

8. The Pune Municipal Corporation (PMC) has decided to subsidize manufacturing of and paper

bags in support of the ban of plastic bags in the city since 8th January, 2010.

Even earlier also in the year 2016, the use of polythene of the said thickness was banned. But most of the states could not enforce its facing vendors and small businessmen oppositions especially of eating points, showing lack of alternatives. This time the Environment Ministry has sensitized the state to a great deal. Many states have made out action plan and some corporate houses have banned plastic used for making bags. India strives assuming the role of global leader for eliminating plastic pollution.

Various states have increased the minimum thickness of plastic carry bags to even higher limits of 40,50 or 70 microns. These States and Union territories are Goa (40 micron), Himachal Pradesh (70 microns), Maharashtra (50 microns), Meghalaya (40 microns), Punjab (30 microns), Chandigarh (30 microns), West Bengal (40 microns), Kerala (30 microns).

9. The Government of Delhi issued a notification on 21st Nov, 2018 titled "The Delhi Degradable Plastics Bags (Manufacturing), Sale and usage and Garbage (Control) (Amendment) Act, 2008, Section II of this notification stipulates that no person shall manufacture stock distribute or sell plastic bags which are less than 40 microns in thickness. Another notification issued on 7th January, 2009 under the powers delegated to Government of Delhi by Central Government under section 5 of Environment (Protection) Act, 1986, which prohibits the use, sale and storage of all kinds of plastic bags in five star and four star Hotels, Hospitals with 100 more beds except the use of plastic bags as prescribed under Biomedical waste (Management and handling) Rules seed, all fruits, vegetable Outlets.
10. Jammu & Kashmir has also banned polythene carry bags under Non-Biodegradable Material (Management, Handling and Disposal Act, 2006 with effect from 11/05/2009.
11. Government of Himachal Pradesh has taken a cabinet decision for complete ban of plastics in Himachal Pradesh under the HP Non-Biodegradable garbage Control Act, 1995, effective from 15/08/2009. Coloured plastic carry bags have been banned in Himachal Pradesh. The Central Government has amended the existing rules to better management of the e-waste and Bio-medical e-waste. It is now mandatory for PROs (Produce Responsibility Organizations) to register themselves with the **CPCB** (Central Pollution Control Board) for better control on them. The e-waste management rules have been amended by Environment Ministry to suit the environment. For Bio-medical waste hospitals and allied clinics are not to use chlorinated plastic bags and gloves. Railway has installed machines at the stations to crush plastic bottles.

Other Countries

'Global Alliance to End Plastic waste' was created in January, 2019. It aims to clean the

environment from existing waste and increase recycling.

1. Albania became the first country to ban lightweight plastic bags in July, 2018. According to Environment Minister of Albania producing and trading plastic bags less than 35 microns in thickness is facing fine between 1 million to 1.5 million lek.
2. Iceland Supermarket chain which specializes in frozen foods, pledged in January, 2019 to eliminate or drastically reduce all plastic packaging for its store-brand products by 2023.
3. The New York has banned single use plastic bags in 2019 and has introduced a 5 cent fee for using single use paper bags. The ban will enter into force in 2020. This will not only reduce plastic bag usage in New York State, but also eliminate 12 million barrels of oil used to make plastic bags used by the state each year.
4. The house of Representatives of Nigeria banned the production, import and usage of plastic bags in the country in 2019.
5. In Canada, the United States and the European Union, BPA plastic has been banned from being incorporated in the production of Baby bottles and Children's cup due to health concerns and higher vulnerability of younger children to the effects of BPA. Taxes have been established in order to discourage specific ways of managing plastic wastes.

Conclusion & Suggestion

Plastic is used very largely on one hand and on the other it is made a quickwaste immediately. Nearly 75% of the stuff results in waste lying scattered on the land fills and made floating on the lakes, rivers and oceans. Nearly 80000 tons of plastic have been found in the form of plastic waste like children toys, broken electronic containers, abandoned fishing nets and micro particles swirling in Pacific ocean. These plastic is equivalent to the weight of 500 Jumbo Jets. More than 08 million tons of plastic enter the oceans every year accumulating in 05 giant garbage patches around the planet.

Fashion today being the freud towards mass luxury and second is the drive for eco-sustainable fashion. Natural fabrics are bio-degradable and can be used to regenerate the earth on decay. They are also carbon neutral. They release no more than the amount of CO₂ absorbed when incinerated.

The production of 01 ton of Poly Propylene used in packaging, containers and cordage emits more than 03 tons of carbon dioxide (CO₂), whereas, Jute absorbs 2.4 tons of CO₂ for every ton produced.

The students are more alive to the prevailing plastic peril and have taken up the issues of making the public aware of it through posters, Banners, Slogans, Songs and playing Street plays. e.g. In La Martineiere Girls' College, Lucknow (U.P) items like shopping bags, pouches, large carry bags and such waste materials were exhibited as replacement to plastic for the knowledge of the public.

So, all round awareness can be created in every sphere of society through such types of positive approaches if taken by the students also. Government

policies against the use of plastics are always in favour of the welfare of mankind and also conservation of biodiversity. But, until and unless we come forward to shoulder our responsibilities at individual level for discarding plastics from our daily routine works, every positive approach towards ban of plastics, will be in vain or in other words complete sensitivity of the people is needed for elimination of plastic to ensure our survival on this planet.

References

- Barnes, D.K.A, Galgani, F, Thompson, R. C, Barlaz, M. (14 June, 2009), "Accumulation and fragmentation of plastic debris in global environments". *Philosophical Transactions of the Royal Society B: Biological Sciences*.364 (1526): 1985-1998.
- Chemical Society, American "Plastics in oceans Decompose, Release Hazardous chemicals, surprising new study says". *Science Daily*. Retrieved 15 March, 2015.
- Danial D. Chiras (2004). *Environmental Science: Creating a Sustainable Future*. Jones & Bartlett Learning PP 517-518.
- Driedger, Alexander G.j., Durr, Hans H., Mitchell, Krissen, Van Cappellen, Philippe(March,2015), "Plastic debris in the Laurention Great Lakes; A review". *Journal of Great Lakes of Research*. 41(1): 9-19.
- Erikson, Marcus (10 December,2014) "plastic pollution in the world's oceans: More than 05 Trillion plastic pieces weighing over 250,000 Tons Afloat at sea" *PLOS ONE* 9(12): e111913.
- Hester, Ronald E, Hamson, R.M. (editors) (2011) *Marine pollution and Human Health*, Royal Society of Chemistry PP 84-85.
- Hammer, J.Kraak, MH parsons, JR(2012), 'Plastics in the marine environment the dark side of a modern gift'. *Reviews of Environmental contamination and Toxicology*. 220 : 1-44.
- Jambeek, Jenna R., Geyer, Ronald, Wilcox, Chns at al (2015). "Plastic waste inputs from land into the Ocean. *Science*. 347 (6223): 768-71. Retrieved 7 January, 2019.
- Laura parker (June, 2018). " We Depend on plastic. Now We're Drowning in it." *National Geographic.com* Retrieved 25 June, 2018.
- Plastic pollution ', *Encyclopedia Britanica*, Retrieved August, 2013.
- Staff, waste 360 "New Global Alliance to End Plastic waste Has Launched" waste 360, Retrieved 18 January, 2019.
- "Sweeping New Report on Global Environmental Impact of plastic reveals Severe Damage to climate". *Centre for International Environmental Law (CIEL)*. Retrieved 16 May, 2019.
- Taylor, Matthad (15 Nov, 2017) "Plastic found in stomachs of deepest sea creatures" in *Guardian* Retrieved 16 Nov, 2017.
- Walker, Tony, R, Xanthos, Drik (2018) 'A Call for Canada to move towards Zero plastic waste by reducing and recycling single use plastics' *Resources, conservation and Recycling*. 133:99-100.
- Walker, T.R. Reid, K., Amonld, J.P.Y, Croxall, J.P.(1997) 'Marine debris survey at Bird Island, South Georgia 1990-1995'. *Marine*.
- "Your tap water may contain plastic, Researchers warn (update)" (<http://phys.org/news/2017-09-plastic.html>) Retrived 15 September, 2017.