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## “Plastic waste management”

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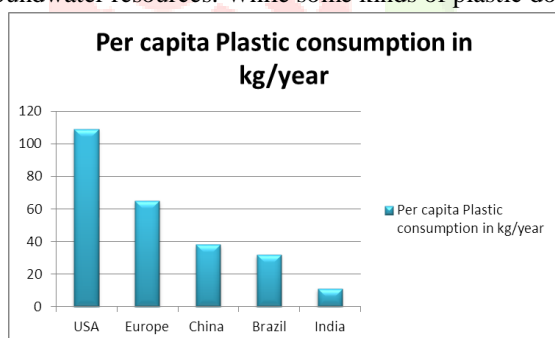
**Abstract:** Plastic waste in Municipals Solid Waste is increasing due to increase in population, rapid development of country and change in lifestyle of people. As plastic is non-biodegradable so it do not decompose at all, it could take up to 450 years to break down. Plastic disposal is major issue which world facing now a days. Plastic pollution can afflict land, waterways and oceans.

**Index Terms** – Plastic waste, types of plastic, Reduce, Reuse, Recycle, and Recovery

### INTRODUCTION

Plastic products have become an integral part of our daily life as a result of which polymeric products are produced at a massive scale worldwide. Plastic products got popularized and widely being accepted because of many reasons mainly light in weight, moldability in any shape, non-corrosive in nature, variety of colors, save the use of plant woods for house hold furniture. Plastics are used in a variety of other consumer and industrial products viz. textile, fibers, packaging, paints, automobiles, alternate building materials etc. Due to their versatile properties, plastics are also used in the electronics such as television, refrigerators, air conditioners, agricultures etc In the present scenario, we find the plastic usage pattern such as in various sectors. The 33% of plastic is being used for the packaging purpose, 20% in building construction, 10% in electrical and electronic items, 7% in automobiles, 5% in agriculture and 25% in the other sectors such as medical.

It is estimated that approximately 70% of plastic packaging products are converted into plastic waste in a short span about 60% of total plastic is recycled, most of it by the informal sector. While the recycling rate in India is considerably higher than the global average of 20%, there is still over 9,400 tons of plastic waste which is either landfilled or ends up polluting streams or groundwater resources. While some kinds of plastic do not decompose at all, others could take up to 450 years to break down.



### literature review

Indian Government Plastic Waste Management Amendment Rules, 2021 Come July next year, the manufacture of a range of plastic products will be banned. These include ear buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, thermocol for decoration, plates, cups, glasses, cutlery such as forks, spoons, knives, straws, trays, wrapping or packing films around sweet boxes, invitation cards, and cigarette packets, plastic or PVC banners less than 100 microns, and stirrers. The Environment Ministry on Friday notified the Plastic Waste Management Amendment Rules, 2021, which prohibits specific single-use plastic items which have “low utility and high littering potential” by 2022. Plastic packaging waste isn't yet covered under the phase-out of single-use plastic items. The Environment Ministry told the Rajya Sabha in July of its proposal to phase out some categories of single use plastic by 2022.

**G.S.R 320(E).** Plastic waste, which can be recycled, shall be channelized to registered plastic waste recycler and recycling of plastic shall conform to the Indian Standard: IS 14534:1998 titled as Guidelines for Recycling of Plastics, as amended from time to time.

Local bodies shall encourage the use of plastic waste (preferably the plastic waste which cannot be further recycled) for road construction as per Indian Road Congress guidelines or energy recovery or waste to oil etc. The standards and pollution control norms specified by the prescribed authority for these technologies shall be complied with. Thermo set plastic waste shall be processed and disposed of as per the guidelines issued from time to time by the Central Pollution Control Board. The inert from

recycling or processing facilities of plastic waste shall be disposed of in compliance with the Solid Waste Management Rules, 2000 or as amended from time to time.

## 1. Methodology of proposed work:

### 1.1 Types of Plastics

1. Polyethylene Terephthalate (PETE or PET) 2. High-Density Polyethylene (HDPE) 3. Polyvinyl Chloride (PVC)  
4. Low-Density Polyethylene (LDPE) 5. Polypropylene (PP) 6. Polystyrene or Styrofoam (PS) 7. Miscellaneous plastics (includes: polycarbonate, polylactide, acrylic, acrylonitrile butadiene, styrene, fiberglass, and nylon).

Plastics are generally categorized into two types

- **Thermoplastics:** Thermoplastics or Thermo-softening plastics are the plastics which soften on heating and can be molded into desired shape such as PET, HDPE, LDPE, PP, PVC, PS etc.
- **Thermosets:** Thermoset or thermosetting plastics strengthen on heating, but cannot be remolded or recycled such as Sheet Molding Compounds (SMC), Fiber Reinforced Plastic (FRP), Bakelite etc. are the examples of the same

### 1.2 Reduce, Reuse, Recycle, and Recovery

#### 1.2.1 Reduce

##### 1. Say NO to plastic straws and say YES to reusable ones

We use more than **500 MILLION plastic straws** every single day. Think about it: when you order coffee at a restaurant or cafe, you don't use a straw to drink it. So why do you need a straw for your water or soda? Saying NO to single-use straws is easier than you think. Restaurants and bars have the tendency to give you a plastic straw even before you have the chance to let them know you'd rather not have one, so make sure upon ordering drinks that you let your waiter or bartender know you are okay with no straw. If you would prefer to use a straw, there are great alternatives such as steel, bamboo, and glass straws that you can carry with you and can use them time and time again.

##### 2. Bring a reusable shopping bag with you

More than 1 **million bags** are used across the globe every day and annually, about **500 billion plastic bags** are produced. Whether you are going grocery shopping at the supermarket or going on a shopping spree at the mall, bring your own bag with you. Most reusable bags are only about 99 cents - a small investment to help out our planet.

##### 3. Get rid of the plastic water bottle

Most stores and many companies make a variety of reusable water bottles. Made in all sizes, shapes, and materials, there is no reason to continue to use plastic water bottles. A single person using a reusable, refillable water bottle instead of single-use plastic water bottles can save as much as 170 bottles from being produced each year. If a family of 5 all hopped on board with this greener practice, that means as a family they would stop about 850 water bottles from having to be produced.

##### 4. PACK YOUR LUNCH IN GLASS CONTAINERS INSTEAD OF PLASTIC

Ditch the plastic Ziplock baggie and use something more eco-friendly than single-use plastic. There are many brands that make glass containers with lids for all of your packed-food needs. Mason jars are also another creative and hip way to pack your foods for lunch.

##### 5. STOP USING PLASTIC CUTLERY

When you get a take-out order, you will automatically be given a set of plastic cutlery. Before you take your food, make sure to ask for no plastic fork, spoon, or knife. Chances are if you are taking the food home, you have silverware readily available and do not need to waste the plastic cutlery. If you are taking your food to-go and bringing it back to work, keep a cheaper set of silverware at work that you can wash off and use over and over again. This also guarantees that you will never be utensil-less for another lunch again!

#### 1.2.2 Reuse

Reuse is a step up from recycling. It diverts plastic and takes pressure off the recycling services. In fact, reuse is the middle-man between reduce and recycle, and some would be surprised at how many opportunities for reuse there really are.

- Use an old fruit juice or milk jug to water plants.
- Save peanut butter jars and use them to store snacks like cheese crackers.
- Use old salad dressing containers to mix and store your own homemade salad dressings.
- Store pet food in large plastic snack containers that cheese puffs come in. It will help keep ants at bay.
- Cut off the bottom of two liter bottles and use them as small planters. They are also great for starting seeds!
- Wash and reuse plastic soda bottles as pretty water containers for refilling water glasses at dinner.

### 1.2.3 Recycle

- 1. Reduces Pollution Across Ecosystems:** Recycling plastic instead of manufacturing it from scratch hence indirectly reduces emission of hazardous greenhouse gases. Plastic waste besides contaminating land, water and soil with harmful chemicals, is also responsible for death of thousands of animals on land, in water and in sea due to ingestion. Recycling plastic means reduced quantum of plastic waste. This in turn reduces pollution and saves a lot of animal species crucial to the food chain.
- 2. Requires Less Energy and Helps Conserve Natural Resources:** Manufacturing of plastic from scratch requires much more energy compared to producing products from recycled plastic. The energy saved can be used for other important requirements in the economy. Also, the manufacturing process requires natural resources such as water, petroleum, natural gas and coal as raw material. Hence, plastic recycling saves precious natural resources.
- 3. Saves Fast-depleting Landfill Space:** Proper waste management through reusing and recycling of plastics can save significant amount of landfill space. 7.4 cubic yards of landfill space can be saved by recycling 1 ton of plastic.
- 4. Eases the Demand on Fossil Fuel Consumption:** Millions of barrels of crude oil are used to fuel the demand for plastics in a single year. Recycling plastics is the most sustainable option to reduce fossil fuel consumption.
- 5. Promotes a Sustainable Lifestyle:** If businesses work along with their internal and external stakeholders towards creating awareness and promoting positive impacts of plastic reuse and recycling, they are bound to bring about a sea change towards environment conservation.

### 1.2.4 Recovery

Energy recovery from waste means the conversion of (non-recyclable) waste into usable heat, electricity, or fuel through a variety of processes, including combustion, gasification, pyrolyzation, anaerobic digestion, and landfill gas recovery.



### CONCLUSION

From the above discussion it is concluded that the environmental hazards due to mismanagement of Plastic waste can be minimized

- By providing healthy plastic alternatives like paper bags and bottles which are environment friendly Products.
- Requires more research and development to make plastic more environments friendly.
- If we have the will, we can start reducing their use in small ways.
- Educate users to the right disposal methods.
- Recycling plastic bags that you can recycle.
- Buy products with bio-degradable packing such as jute bags, cotton bags, and paper bags.
- Re-use your plastic shopping bags or better still don't use plastic bags.

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