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# **Plastic and the Environment**





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The first man-made plastic was first invented in the 1860s. It started to be developed at the industry level in the 1920s. It has now become one of the world's fastest growing sectors. From 1950 until today, the plastic sector growth averaged a striking 8.7% per year, rising from 1.7 million tons produced in 1950 to the nearly 300 million tons produced today.

Plastics play a major role in modern life and the huge amount of plastics in use has a significant impact on the environment. Its multiple uses and the physical and chemical properties lead to commercial success. However, the random disposal of plastic has become a major threat to the environment. In particular, the single use plastic carry bags are the biggest contributors of littered waste and every year, millions of such plastic bags end up into the environment vis-a-vis soil, water bodies, water courses, etc. It takes an average of one thousand years to decompose completely.

A United Nations report issued to mark World Environment Day showed more than 50 nations are acting to cut plastic, including bans on single use plastics and the promotion of biodegradable bags. India has pledged to eliminate all singleuse plastic in the country by 2022. MoEF&CC has also launched a pan-India plastic cleanup drive in public areas, national reserves, forests, beaches and rivers.

Major efforts are underway to reduce the impact of plastics on the environment and to make them more environmentally friendly. Such efforts include the use of bio-materials instead of non-renewable resources such as petroleum for manufacturing polymers. There are also studies which are aimed at reducing the impact of discarded plastic products on air and water supplies, as well as on the flora, fauna and landfills.

The Environment Protection Laws prohibit the manufacturing, stocking, distribution or sale of carry bags made of virgin or recycled plastic and prohibits littering of plastic items. The blanket ban on single use plastic has spooked consumers and retailers. Many companies like Starbucks, Mc Donald, Bon Appétit and many corporate committed to environmental sustainability are phasing out the single use plastics like straws. Though straws are just a small fraction of all plastic pollution, these have become a symbol of waste.

There is a need of creating awareness regarding hazards and types of hazards associated with plastic bag usage, awareness about recyclable plastic bags, awareness of eco-friendly alternate material for making bags and awareness about the legislation which bans the usage of plastic bags among consumers. As citizens, the least we can do is to cooperate with the government by making smaller changes in our everyday lives like carrying a cloth-bag or other eco-friendly alternatives on trips to the grocery or retail stores, shopping spree etc.

The present issue describes the positive and negative side of the plastics. It gives the national and international regulations and standards controlling plastics production, plastics waste and recycling. It presents the research studies on the environmentally friendly alternative to conventional plastic. Consumers get tips how to avoid plastics.

### **Plastic and the environment**



The Oxford Dictionary defines plastic as "A synthetic material made from a wide range of organic polymers such as polyethylene, PVC, nylon, etc., that can be moulded into shape while soft, and then set into a rigid or slightly elastic form."

Plastic is usually made from hydrocarbons that are obtained from natural gas or oils. Basically, a lot of monomers come together to form a polymer that forms up a plastic material. These polymers are not always good for the environment we live in. These are non-organic and do not decompose. Therefore, they pose a threat to the atmosphere. Plastic can have both positive and negative effects on our environment and on us. It has many redeeming ecological features.

### **Advantages**

Plastics are not inherently bad. Plastic is one of the most used material, these days. It is being used in almost every industry. The durability and low maintenance of plastics reduce material replacement and its lightweight reduces transport energy. The wear and tear of plastic are very less and is recyclable. It can be used roughly.

Due to their low cost, ease of manufacture, versatility, and imperviousness to water, plastics are used in a multitude of products of different scale, including paper clips and spacecraft. Plastics also have many uses in the medical field, with the introduction of polymer implants and other medical devices derived at least partially from plastic.

Many manufacturing industries are using plastics in their processes. The automotive industry is one of the industries which is using plastics. Highperformance plastics are playing an important role in the automotive industry. The fuel-efficient vehicles require lightweight material. It is estimated that every 10% depletion in vehicle weight results in approximately a 5 - 7% depletion in fuel usage. With the environmental concerns, the automotive industry is making fuel-efficient cars as their main priority.

Plastics have significantly impacted on the healthcare industry and made substantial improvements.

Plastics have been used widely to create medical tools and devices like surgical gloves, syringes, insulin pens, IV tubes, catheters, inflatable splits, etc. Such products are produced for one-time use and help to prevent the spread of diseases by eliminating the need to sterilize and re-use a device.

Plastics find use in the **construction industry**, mainly in thin coverings, panels, sheets, foams, pipes, etc for buildings. Skillful use of plastics expand the usefulness and life of conventional building materials and help them to function more efficiently and economically.

The **aerospace industry** is focusing on reducing the weight of the aircraft in order to attain better fuel efficiency and performance. High-performance engineering plastics are used in this industry due to their light weight compared with other industrial materials. A typical engineering polymer has half the density of aluminium or glass and 1/6th the density of steel.

Due to versatile, durable, flexible, rigid and light nature, the **packaging industry** is using plastics with both hands. With different techniques, plastic can be shaped and moulded into any desirable form, have any colour, or any physical property.

Its thermal and insulation properties made it ideal to become the backbone of the **electronics industry**. It does not change its form after they are heated, manufacturers use plastic regularly for circuit boards, chips, coffee makers, mixers, microwave ovens, hair dryers and even refrigerators.

**Recycling** of plastic saves money and energy, reduces the amount of plastic in the landfills or seas, reduces the amount of greenhouse gas emissions that are created during the production of "virgin" plastic, and more.

#### Disadvantages

Plastic bags have been known to cause a lot of **environmental degradation**. Decomposing of a single plastic product can take up hundred years. This makes the products stay in environments

longer. Before the degradation, waste plastic products clog waterways, oceans, forests, and other natural habitats that are filled with animals who mistake dangerous plastic for food. Plastics are the threat to animal life. It is reported that whales, turtles and birds die every year, mainly because of plastic in their environment. Burning of plastic release toxic fumes into the environment, in turn taking the air pollution to higher levels. Chemical dangers are also high because both creation and recycling of plastic produce toxic materials of many kinds. Some plastics are highly flammable. This makes them a fire hazard.

Plastics often leach chemicals, including **hazardous chemicals**, through common temperature changes. Various chemicals that can be found in plastic bottles,



bags and food containers that may be unleashing few toxins into food and beverages. These chemicals make their way into our bodies and creating a variety of health issues. This includes cancer, reproductive issues, immune system suppression and problems with childhood development just to name a few.

The scientists in the BMJ-a weekly peer-reviewed medical journal, warn of potential long-term damage to exposure to synthetics, including formaldehyde in drinks bottles. Most of these substances are not inert and can leach into the foods we eat, they say. Despite the fact that some of these chemicals are regulated, people who eat packaged or processed foods are likely to be chronically exposed to low levels of these substances throughout their lives. Far too little is known about their long-term impact. Plastic products are **non-renewable**. These are made of petrochemicals, a non-renewable source of energy. They can be recycled, but not as easily as paper bags.

Its **short useful life** results in pile-ups of unwanted garbage everywhere. Although some plastics are recycled, most remain uncollected at dump sites and pollute the environment. Additionally, polythene bags are easily carried by the wind, something that makes them almost impossible to collect for recycling.

Plastics make our lives easier, however, is their cost on the environment worth it?



Source: https://plastics-car.com/Resources / Brochures/Plastics-in-Automotive.pdf http://www.omega-plastics.co.uk/industryinsights/positive-impact-plastic/ https://www.sciencedirect.com/science/book/9781 455732012#book-description http://www.historyofplastic.com/plasticfacts/benefits-of-plastic/

# **Alternatives to conventional plastics**

Plastic waste forms a significant part of solid waste and has caused increasing environmental concerns. In 2015, Jenna Jambeck, a University of Georgia engineering professor, caught everyone's attention with a rough estimate: between 5.3 million and 14 million tons each year just from coastal regions. These were dumped carelessly on land or in rivers, mostly in Asia. It's then blown or washed into the sea. It's unclear how long it will take for that plastic to biodegrade completely into its constituent molecules. Estimates range from 450 years to never.

Scientists are on the search of a more environmentally friendly alternative to conventional plastic. They are working on a new generation of plastics known as 'bioplastics', products which can be tailored to be biodegradable or recyclable, and produced either fully or in part from renewable resources. Bioplastics are able to degrade, reducing the risk that plastics will end up polluting land or sea. They also lower the dependence on fossil fuels, reducing plastics carbon footprint. The greenhouse gas emissions associated with bioplastics are 26%



lower than those associated with conventional plastic, according to a life-cycle analysis of cornbased and petroleum-based plastic by researchers at Michigan State University.

A study published in the Journal of the American Chemical Society in 2014, G. W. Coates and his colleagues at Cornell University described a new material with a semi-crystalline structure that is made from a sugar feedstock and has properties similar to polyethylene, yet is better able to decompose at the end of its useful life. The new material, known as poly (polypropylene succinate), has not been tested to see how quickly it would decompose in a landfill or marine environment. But based on its composition, Coates says, it should begin to degrade in water after several months, a time period that would exceed the useful life of most single-use products. Poly (polypropylene succinate) breaks down into propylene glycol and succinic acid, nontoxic materials that are further reduced to CO2 and water when ingested by microbes.

The term 'bioplastics' refer to either the bio-based origin of a plastic or to the biodegradable character of a plastic.

'**Bio-based**' is defined in European standard EN 16575 as 'derived from biomass'. Therefore, a bio-based product is a product wholly or partly derived from biomass. Biomass is material of biological origin, excluding material embedded in geological formations and/or fossilized (EN 16575, 2014). Examples are paper and wood, but also plastics such as PLA (Polylactic acid) whose building blocks are produced from sugars. These are made from renewable resources instead of non-renewable petroleum-based resources.

**'Biodegradable'** plastic degrades through exposure to naturally occurring microorganisms. When classifying a plastic as a biodegradable, the environment and time frame must be specified; otherwise the claim is rendered pointless due to an array of variations. These are designed to biodegrade in specific environments, including marine environments, sunlight, soil, industrial composting facilities and backyard home compost.

A study published in the *Philosophical Transactions* of *Royal Society B* by J H Song and his colleagues discussed biodegradable plastics (BDPs) as an alternative to conventional plastic packaging. It investigated their advantages and the possibilities for



waste management. The study compared BDPs and conventional plastics. They suggested that it would be necessary to distinguish between different BDPs for successful home composting. Labelling schemes could provide useful guidance for the public.

UN Environment a leading global voice on the environment published a report in 2018 assessing the potential of replacing conventional plastics with alternative materials in certain applications. The report highlighted some relatively conventional alternatives as well as less obvious solutions: including algae, fungi and pineapple leaves. Twentyfive case studies from around the world illustrated a wide range of applications to reduce our dependence on the unnecessary use of plastics of disposable plastics. The report contributed to the debate on how to make our use of the planet more sustainable, citing several of the Sustainable Development Goals, including poverty reduction, increased community resilience, and waste minimization.

"Making the switch from disposable plastic to sustainable alternatives is an investment in the longterm future of our environment," Erik Solheim, Head of UN Environment said. "The world needs to embrace solutions other than single-use, throwaway plastic"

Source: https://www.pri.org/stories/2015-08-14/researchers-are-hunt-find-more-

environmentally-friendly-alternative-conventional, http://worldenvironmentday.global/en/news/explo ring-alternative-materials-reduce-plastic-pollution https://pubs.acs.org/doi/abs/10.1021/ja509440g https://www.nationalgeographic.com/magazine/20 18/06/plastic-planet-waste-pollution-trash-crisis/ https://www.wur.nl/upload\_mm/e/6/8/113a1607-0925-4829-b864-f0e6a5fc79c5\_170419 %20Report%20Bio-based%20Plastic%20Facts.pdf http://rstb.royalsocietypublishing.org/content/364/ 1526/2127

# **Regulations and Standards**

Plastic is a kind of material that is commonly known and used in everyday life in many forms. It becomes an important part of every one's life. The main concerns with plastic products are the disposal steps. These are non-biodegradable and remain in the environment for decades.

### **Indian Rules and Regulations**

India, one of the largest consumers of plastics products, has taken significant steps towards regulating plastics production and plastic wastes. According to Plastindia Foundation, plastics consumption of the country is expected to increase from the current 12 million metric tonnes per annum (MMTPA) to 20 MMTPA by 2020.

There are several regulations in India to limit and control the plastic wastes and regulate the plastics industry, with some new rules and amendments introduced regularly.

#### **Environment (Protection) Act of 1986**

The Central Government has enacted a legislation, 'The Environment (Protection) Act, 1986', with an objective for the protection and improvement of the environment and for matters connected therewith. In exercise of powers conferred by different sections of the Environment (Protection) Act, 1986 (, the Central Government makes the rules, namely the Environment (Protection) Rules, 1986.

The first rule on Plastics waste in India is the **Recycled Plastics (Manufacture & Usage) Rules, 1999**. The intent of this regulation is to control the packaging of food products in recycled plastics and to manage the severe littering problem. It is amended in 2003 under the Environment (Protection) Act, 1986 to regulate the manufacture, sale and use and recycling of plastic bags. These rules provided that plastic carry bag should have a minimum thickness of 20 microns; carry bags or containers made of recycled plastic shall not be used for packaging of foodstuffs and recycling of plastic waste in accordance with the Bureau of Indian Standard (BIS) specifications. Powers have



been delegated to the State Pollution Control Boards / Pollution Control Committees for taking action for violation of Rules promulgated under the Environment (Protection) Act, 1986.

The **Plastic Waste (Management and Handling) Rules, 2011** provides a regulatory framework for management of plastic waste generated. It was amended in July 2011 in the supresession of the earlier Rules. The new Rules have specified, inter-alia that plastic carry bag should have a minimum thickness of 40 microns and that sachets using plastic material can not be used for storing, packing or selling gutkha, tobacco and pan masala. Some States have prescribed more stringent norms for thickness of plastic bags or have banned the use of plastic bags in tourist/public places. Under Rules, 2011 municipal authority is responsible for enforcement of the provisions relating to the use, collection, segregation, transportation and disposal of plastic waste.

The Government has notified the **Plastic Waste Management Rules, 2016**, in suppression of the earlier **Plastic Waste (Management and Handling) Rules, 2011**. The minimum thickness of plastic carry bags has been increased from 40 microns to 50 microns. The rules, which were admissible upto municipal areas, have been extended to all villages. The Plastic Waste Management Rules are a part of the revamping of all Waste Management Rules. The producers, importers and brand owners who introduce the plastic carry bags, multi-layered plastic sachet, or pouches, or packaging in the market, they need to establish a system for collecting back the plastic waste generated due to their products. The waste collection system will be based on Extended Producers Responsibility and involve the State Urban Development Departments, either individually or collectively, through their own distribution channel or through the local body concerned. It will improve the collection of plastic waste, its reuse/ recycle. The Government has amended this rule and now it is known as **Plastic Waste Management (Amendment) Rules, 2018**.

The Rule 10 'Explicit pricing of carry bags' states, "No carry bags shall be made available free of cost by retailers to consumers. The municipal authority concerned may, by notification determine the minimum price for carry bags depending upon their quality and size, which covers their material and waste management costs in order to encourage their re-use so as to minimise the plastic waste generation." As per amendment in the **Plastic Waste** Management Rules in 2018 only the registered shopkeepers or street vendors shall be eligible to provide plastic carry bags for dispensing the commodities. The local body shall utilize the amount paid by the customers for the carry bags exclusively for the sustainability of the waste management system within their jurisdictions. It will discourage the use of plastic carry bags, because of their adverse impact on the environment.

To implement these rules more effectively and to give thrust on plastic waste minimization, source segregation, recycling, involving waste pickers, recyclers and waste processors in collection of plastic waste and adopt polluter pays principle for the sustainability of the waste management system, the Central Government has reviewed the existing rules and implemented the revised rules.

#### **Indian Standards**

The Bureau of Indian Standards (BIS), the National Standards Body of India, is a statutory organisation established under the Bureau of Indian Standards Act. The BIS is meant for quality standards set by the Government of India. The BIS works with the Food Safety and Standards Authority of India (FSSAI) on the issue of plastic contamination in bottled water. The two bodies monitor packaged water in the domestic market. Use of plastics for packaging applications is increasing both in quantum as well as in the variety. Plastics are available in various forms such as mono films, co-extruded films, laminates, sachets, jars, bottles, Jerry cans, trays, cups and containers of all shapes and sizes. The BIS has formulated the National Standards for plastics. These standards provide general guidance.

**Indian Standard: IS 2828-2001:** "Plastics – Vocabulary" defines terms used in plastic industry.

**Indian Standard: IS 9833-2014 :** "List of pigments and colourants for use in plastics in contact with foodstuffs, pharmaceuticals and drinking water" provides a list of pigments and colourants approved for food grade plastics.

**Indian Standard: IS 10171-1999: "**Guide on Suitability of Plastics for Food Packaging" provides a general guidance to the food packer in selecting the specific thermoplastic material, singly or in combination, to design an acceptable food packaging system.

**Indian Standard: IS 13360-1992 Part 1-15:** "Plastics -Methods of Testing" describes a range of methods for testing plastics. It covers standard atmospheres for conditioning and testing plastics.

Indian Standard: IS 14534-1998: "Guidelines for Recycling of Plastics" prescribes guidelines to the manufacturers of plastic products with regard to the marking to be used on the finished product in order to facilitate identification of the basic raw material. It will also help in identifying whether the material used on the end product is virgin, recyclate or a blend of virgin and recyclate.

**Indian Standard: IS 14535-1998:** "Recycled plastics for the manufacturing of products – Designation" is intended to be used for the identification and classification of the recycled plastics material on the basis of its basic properties and applications. It applies to recycled plastics material ready for normal use without any further modifications.

**Indian Standard: IS 17088-2008:** "Specifications for Compostable Plastics" specifies procedures and requirements for the identification and labelling of plastics, and products made from plastics, that are suitable for recovery through aerobic composting.

#### Marking/Codification

Each plastic carry bag and multilayered packaging shall have the following information printed in English namely,-

- Name and certificate number in case of carry bags made from compostable plasticName, registration number of the manufacturer and thickness in case of carry bag;
- (ii) Name and registration number of the manufacturer in case of multilayered packaging;
- (iii) Name and certificate number in case of carry bags made from compostable plastic

and the end product made out of recycled plastics shall be marked as **"recycled"** along with the indication of the percentage of use of recycled material. Other manufacturers, who do not have printing facilities, shall comply with the condition within one year of publication of these rules. Manufacturers shall print on each packet of carry bags as to whether these are made of **"recycled material"** or of **"virgin plastic"**. Each carry bag made from compostable plastics shall bear a label **"compostable."** 

The manufacturers of plastics end products from either virgin or recycled plastics shall mark the symbol at the time , of processing in order to help the



reprocessors to identify the basic raw material.

In addition to the symbol, the end product made out of recycled/reprocessed plastics, wherever possible, shall be marked with 'Recycled indicating percentage of use of recycled material'. Alternatively, the following codification shall be used:

RO	No recycle/reprocess
R1	Less than 10%
R2	11 to 20%
R3	21 to 30%
R4	31 to 40%
R5	41 to 50%
R6	51 to 60%
R7	61 to 70%
R8	71 to 80%
R9	81 to 90%
R10	over 90%

The following information shall also be printed bilingually, English/Hindi and local language wherever possible on the end-product for the benefit of users/reprocessors:

> 'This product (like carry bags/shopping bags, bottles, blow-moulded containers, etc.) is made of (indicate materials) and is reusable/recyclable'

However, carry bags/containers made out of recycled plastics shall be labelled as 'Not suitable for packing/ storing/carrying food products.'

#### **International Standards**

International Organisation for Standardisation (ISO) The ISO is a worldwide federation of national standards bodies. The scope of the standards for the plastics under ISO are standardization of nomenclature, methods of test, and specifications applicable to materials and products in the field of plastics including processing (of products) by assembly in particular, but not limited to, polymeric adhesives, sealing, joining, welding.

#### Quality Standard ISO 9000:2000

The ISO 9000 series of standards are on quality management systems. It is an internationally recognised benchmark for measuring quality in the context of trade.

#### World Trade Organization (WTO)

The WTO is an international organization that develops rules and principles governing the movement of goods and services in the world trading system. The international norms for all aspects of production and marketing would be governed by the WTO Regulations. Under the WTO regime, the two agreements that enable the enforcement of quality and safety are:

- Agreement on Sanitary and Phytosanitary Measures (SPS)
- Agreement on Technical Barrier to Trade (TBT)

#### Sanitary and Phytosanitary Agreement (SPS)

The SPS agreement requires that, with regard to food safety measures, WTO members base their national measures on sound scientific evidence and judgement, taking into account international standards, guidelines and other recommendations adopted by the Codex Alimentarius Commission, where they exist.

#### Technical Barriers to Trade (TBT)

The agreement on the TBT covers all technical requirements and standards (applied to all commodities) such as labeling, that are not covered by the SPS Agreement. The SPS agreement covers those aspects related to health i.e. food additives, pesticide residues, residues of veterinary drugs, codes and guidelines of hygienic practices etc. Aspects such as labeling are covered by the TBT Agreement. For example, in the case of a carbonated beverage sold in a plastic bottle, the bottling method, contaminants, packaging material coming in contact with the drink, and additives are covered by the SPS, while product description, labeling and package specifications are covered by the TBT agreement.

#### **Codex Alimentarius**

The establishment of the joint FAO/WHO Food Standards Programme and of the Codex Alimentarius Commission (CAC) ensures the quality and safety of food. They set forth the rules and procedures of and determine the standards for, hygienic and technically appropriate production, processing, transport, storage and marketing of plastic materials and articles intended to come into contact with foodstuffs. There are specific substances which may migrate into foods from plastic materials used in food packaging.

#### Hazard Analysis Critical Control Points (HACCP)

It is a food safety management system based on logical, scientific approach to control safety problems in food processing in a timely manner. It is a product specific and plant specific, and therefore, a unique plan has to be chalked out for each product and/or process.

#### **Codex and Packaging**

The CAC has brought out Codex General Standards for the labeling of prepackaged food. This general standard covers mandatory labeling requirements such as naming of food, listing of ingredients, the format of net contents and drained weights, identification of the manufacturer, packer, distributor, importer, exporter or vendor, inclusion of country of origin and the special identification of food that has been irradiated. The issue of packaging is also covered which specifies that packaging should not transmit to the food product substances beyond the limits acceptable to the official agency having jurisdiction.

Plastics have been the ideal material for packaging of the foods/products. Safety is a growing concern among consumers. Standards and specifications for packaging have played a vital role in putting the packaging industry on a sound footing in globalised markets.

#### Source:

http://pib.nic.in/newsite/PrintRelease.aspx?relid=7 4888,

http://storage.unitedwebnetwork.com/files/26/d35 969d83be871a54153b9d08bb8f383.pdf

http://pibphoto.nic.in/documents/rlink/2016/mar/ p201631802.pdf

http://pib.nic.in/newsite/printrelease.aspx?relid=13 8144,

http://www.moef.gov.in/sites/default/files/PWM%2 0Rules%2C%202016.pdf,

http://www.questin.org/sites/default/files/standar ds/is.14534.1998\_0.pdf

http://icpe.in/icpefoodnpackaging/pdfs/28\_nationa l\_international.pdf

http://www.icpe.in/Plastics%20in%20Food%20Pack aging/pdf/13-Final.pmd.pdf

# Ways to avoid Plastics



Avoiding plastics in day-to-day life might seem difficult, but it is easier than it appears. Is avoiding plastic difficult for you? We have solutions. Here are just some things that we can do:

**Break up with plastic.** The campaign of the World Environment Day 2018 was beating the menace of plastic pollution. There is need to underscore the mantra '**if you can't reuse it, refuse it'**. Going plasticfree is not an easy task, but try to avoid plastics in your life will also help you avoid the hazardous chemicals they carry.

**Carry reusable shopping bags.** Keep folding/r eusable bags with you and remember to bring them into the store with you. Carry them for all of your purchases, from electronics to clothing.

**Don't heat food in plastic containers**. Do not microwave leftovers. Heat can aid in the breakdown of plastics and release of chemicals like bisphenol-A (BPA)- often referred to as endocrine disruptors. Opt for glass or ceramic food containers when warming up.

**Go for a reusable, non-plastic water bottle**. Reject the single-use plastic water bottle and choose the more sustainable way by getting a reusable water bottle either made of metal or glass. You'll avoid daily exposure to toxins by hydrating without plastic. **Play the numbers game**. Plastic products are labeled with numbers (1 to 7) to indicate the chemical makeup and the ability of the product to be recycled. Avoiding **number 6** will keep you away from styrene, while **numbers 3** and **7** will help you avoid BPA and phthalates. **Numbers 2, 4** and **5** are safe and are not known to leach any chemicals into drinks and food. **Number 1** is intended for one-time use. It can be recycled.

**Prefer fresh over packaged food**. Packed food is safer food. Yes, but the food can still be stored and kept safely without plastic packaging. Eating food without plastic packaging is a huge way to keep plastic toxins out of the body.

If it's plastic, think twice. There are many other ways to help reduce your plastic intake. Plastic items are all around us. Avoid it when possible and to think twice before buying a plastic item that can easily be replaced.

However, studies on consumer preferences revealed that a large proportion of people do not value environmental aspects. Moreover, poor enforcement of legislation has made the ban towards plastic bag usage largely ineffective. The result being plastic bags is used widely by small business owners like hawkers, retail shops and in shopping malls. Also, an ecofriendly substitute for plastic (for all purposes) has not been found till date.

### Take the pledge to refuse single-use plastic.











uses 500 billion plastic bags



Every year, we use 17 million barrels of oil to produce plastic bottles for our water



In the last decade, we produced more plastic than in the whole last century



In 2016, **480 billion** drinking bottles were sold worldwide



50% of the plastic we use is **single-use** or disposable



10% of all of the waste we generate

Source: https://myplasticfreelife.com/plasticfreeguide/

The Environmental Information System acronymed as ENVIS was implemented by the Ministry of Environment & Forests by end of 6th Five Year Plan as a Plan Scheme for environmental information collection, collation, storage, retrieval and dissemination to policy planners, decision makers, scientists and environmentalists, researchers, academicians and other stakeholders.

The Ministry of Environment and Forests has identified Consumer Education and Research Centre (CERC), Ahmedabad, as one of the Resource Partners to collect and disseminate information on "Environment Literacy -Eco-labelling and Eco-friendly Products". The main objective of this ENVIS Resource Partner is to disseminate information on Eco products, International, and National Eco labeling programmes.

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Write to us: We value your views and suggestions. Please send your feedback on this issue. We would also like to invite your contributions on the Eco Product and Eco Labelling.

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