



Recycling of Polymers

Presented by:

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What is plastic ???



➤ Plastic is the general common term for a wide range of synthetic or semi synthetic organic solid materials suitable for the manufacture of industrial products. Plastics are typically polymers of high molecular weight, and may contain other substances to improve performance and/or reduce costs.

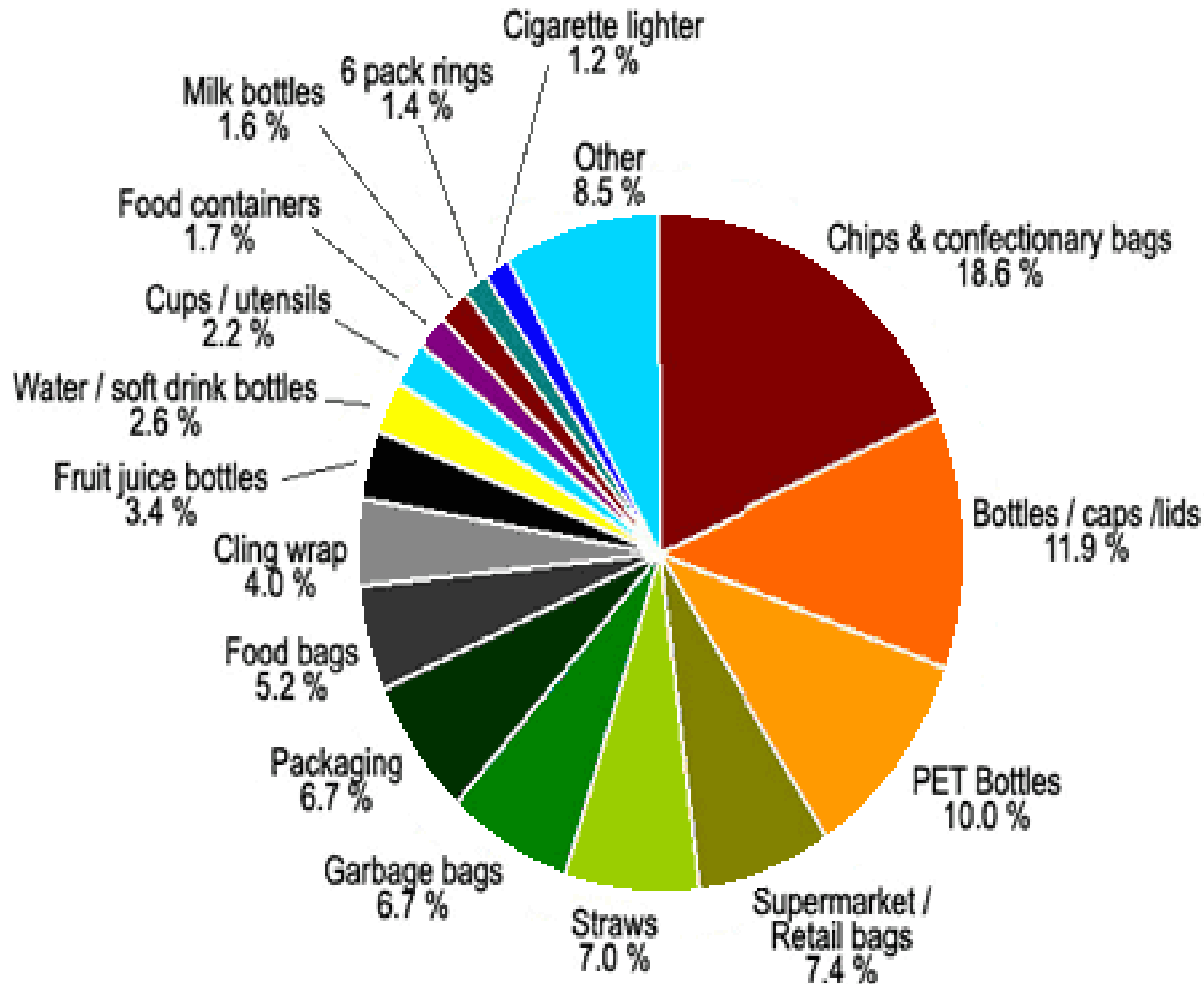
➤ Plastic is one of the few new chemical materials which pose environmental problem. Polyethylene, polyvinyl chloride, polystyrene is largely used in the manufacture of plastics.



History of Plastic

- The first man-made plastic was created by **Alexander Parkes** who publicly demonstrated it at the 1862 Great International Exhibition in London.
- The material called **Parkesine** was an organic material derived from cellulose.
- **Celluloid** is derived from cellulose and alcoholized camphor. **John Wesley Hyatt** invented celluloid in 1868. He created celluloid in a strip format for movie film.
- By 1900, movie film was an exploding market for celluloid.





PLASTIC'S EFFECT ON HUMAN LIFE

- Plastic plays the villain right from the stage of its production. The major chemicals that go into the making of plastic are highly toxic and pose serious threat to living beings of all species on earth.
- Some of the constituents of plastic such as **benzene** are known to **cause cancer**. Plastic resins themselves are **flammable and have contributed** considerably to several accidents worldwide.



- Once **plastic is produced**, the harm is done once and for all. Plastic defies any kind of attempt at disposal – be it through recycling, burning, or landfilling.
- When you **recycle a hazard, you create a hazard**.
- Recycling of plastic is associated with skin and respiratory problems, resulting from exposure to and inhalation of toxic fumes, especially **hydrocarbons and residues released during the process**.

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Plastic poison - Styrofoam

- Styrofoam is one of the most environmental toxins found in plastic.
- Polystyrene, is manufactured using benzene, from coal; styrene, from petroleum; and ethylene, a "blowing agent" used in the process since the crackdown on CFCs.
- Extracting these raw materials generates air and water pollution, it can lead to lung cancer and neurological problems in factory workers.
- Like all plastics, polystyrene is non-biodegradable. Even after a take-out container has dissolved 500 years from now, its chemical components will still clog the eco-system.
- Research on whether polystyrene chemicals "migrate" from container to food is hotly debated, but it's a fact that styrene has been present in our fatty tissue and breast milk for the past 30 years.



Pollution due to plastic bottles

Bisphenol -A

- Food and drinks stored in plastic bottles can contain trace amount of Bisphenol A (BPA), a synthetic chemical that interferes with the body's natural hormonal messaging system.
- Repeated re-use of such bottles—which get dinged up through normal wear and tear and while being washed—increases the chance that chemicals will leak out of the tiny cracks and crevices that develop over time.
- BPA has been linked to breast and uterine cancer, an increased risk of miscarriage, and decreased testosterone levels.
- BPA can also wreak havoc on children's developing systems. Even Plastic Water and Soda Bottles should not be reused.
- A tin can that entered the ocean in 1986 is still decomposing in 2006 but a plastic bottle that entered the ocean in 1986 is decomposing in 2436.



PLASTIC RESIN CODES



PETE



HDPE



V



LDPE



PP



PS



OTHER

Polyethylene
Terephthalate

soda bottles
water bottles
shampoo bottles
mouthwash bottles
peanut butter jars

High Density
Polyethylene

milk, water and
juice jugs
detergent bottles
yogurt and
margarine tubs
grocery bags

Vinyl

clear food
packaging
shampoo bottles

Low Density
Polyethylene

bread bags
frozen food bags
squeezable bottles
(mustard, honey)

Polypropylene

ketchup bottles
yogurt and
margarine tubs

Polystyrene

meat trays
egg cartons
cups and plates

Other

ketchup
3 & 5 gallon
water bottles
some juice bottles

Recycling of Plastic

- The biggest problem with plastic recycling is that it is difficult to automate the sorting of plastic waste, and so it is labor intensive.
- Typically, workers sort the plastic by looking at **the resin identification code**, though common containers like soda bottles can be sorted from memory.
- Only **3.5 percent of all plastics are recycled** in any way.
- It is estimated that between **500 billion and a trillion plastic bags are consumed worldwide each year**.
- **Less than 1 percent of these are recycled** as it costs more to recycle a bag than to produce a new one.



Recycling of Plastic..

- Recycling of plastic is associated with skin and respiratory problems, resulting from exposure to and inhalation of toxic fumes, especially hydrocarbons and residues released during the process.
- What is worse, the recycled plastic degrades in quality and necessitates the production of more new plastic to make the original product.
- Recycling of plastic is very uneconomical, dirty and labour-intensive as has been revealed by a study conducted by the Public Interest Research Group, based in Delhi, India.



Remedies Searched



- [Switch to reusable shopping bags.](#)

 By using ONE reusable cloth bag, you can save up to 6 plastic bags a week

- that translates into 24 bags a month
- or 288 bags a year
- that amounts to 22,176 bags in an average lifetime

- [Recycle your plastic bags.](#)

Many grocery stores now collect plastic bags for recycling.

Solutions

- Some European nations have placed incinerators on their ships to burn all the wastes products
- The International Convention for the Prevention of Pollution from Ships forbids US dumping w/in 320 km of coasts & none at all in the Gulf of Mexico
- Chinese cities banned the use of foam lunch boxes
- Taiwan banned plastic bags and foam containers
- Total Recycling has developed optical technology to improve the manual sorting of mingled plastics to make recycling more efficient



What are the reasons responsible for Plastic Pollution in our Community.

- ❑ Waste of the households, Shops,etc.
- ❑ Improper garbage system of the area.
- ❑ Irregularity of the Pvt. Garbage contractors.
- ❑ Ignorance of the people about the causes and effects of the plastic pollution.
- ❑ Lack of proper knowledge about the plastic pollution and its effects.
- ❑ Lack of social responsibility and ownership.



SOLUTIONS TO CONTROL PLASTIC POLLUTION.

- Awareness campaigns~ Stop using plastic bags.
Educate people about the plastic pollution and its effects on our environment.
- Road show in regards “No to plastic bags”, and display of banners on the walls of slums, colonies and societies areas.
- Hands with the Municipal Corporation to take the corrective measures, to do timely inspections.
- Support NSS, NGOs, Volunteer agencies and others to organize “Safai Abhiyan” in all Society slums, colonies and rural areas.
- Social responsibility, commitment and ownership by every individual may control the problem.

SAY NO
TO PLASTIC BAGS



THANK YOU!!!
TO SPREAD SUCH A SOCIAL
MESSAGE

A composite image illustrating the impact of plastic pollution on marine life. The central figure is a fish whose body is a clear plastic bottle with a blue cap. The fish's mouth is open, revealing a sharp fishing hook. The fish is surrounded by various pieces of plastic trash, including a black cap, a white plastic bag, and several blue plastic bottles, all floating in a blue, sunlit underwater environment. The text "POLLUTION IS in the FOOD CHAIN" is written in white at the top right, and "PLASTIC Kills Life" is written in red at the bottom right.

POLLUTION
IS in the **FOOD CHAIN**

PLASTIC
Kills Life

Plastic is 'non-degradable'

- Plastic is a non-biodegradable substance, composed of toxic chemicals; plastic pollutes earth, air and water.
- Plastic causes serious damage to environment both during its production and disposal.
- Plastic does not undergo bacterial decomposition hence land filling using plastic would mean preserving the poison forever.
- Plastics are very strong and durable.
- They won't rot, decay, tear, crack or dissolve. Even 500 years from now, the foam cup you throw away will still be a piece of garbage in a landfill site.



Plastic pollution by numbers

-  Thrown away: **35 billion** plastic water bottles a year in the US
-  Approximately **500 billion** plastic bags used annually worldwide
-  Over **40 percent** of plastic usage is in packaging
-  Plastics are estimated to account for **8 percent** of world's oil production
-  Over **250 species** known to have ingested or become tangled in plastic
-  A 2002 UN study estimated **\$7 trillion** a year of economic risk from plastic pollution

Source: Plastic Oceans



ADDICTED TO PLASTIC



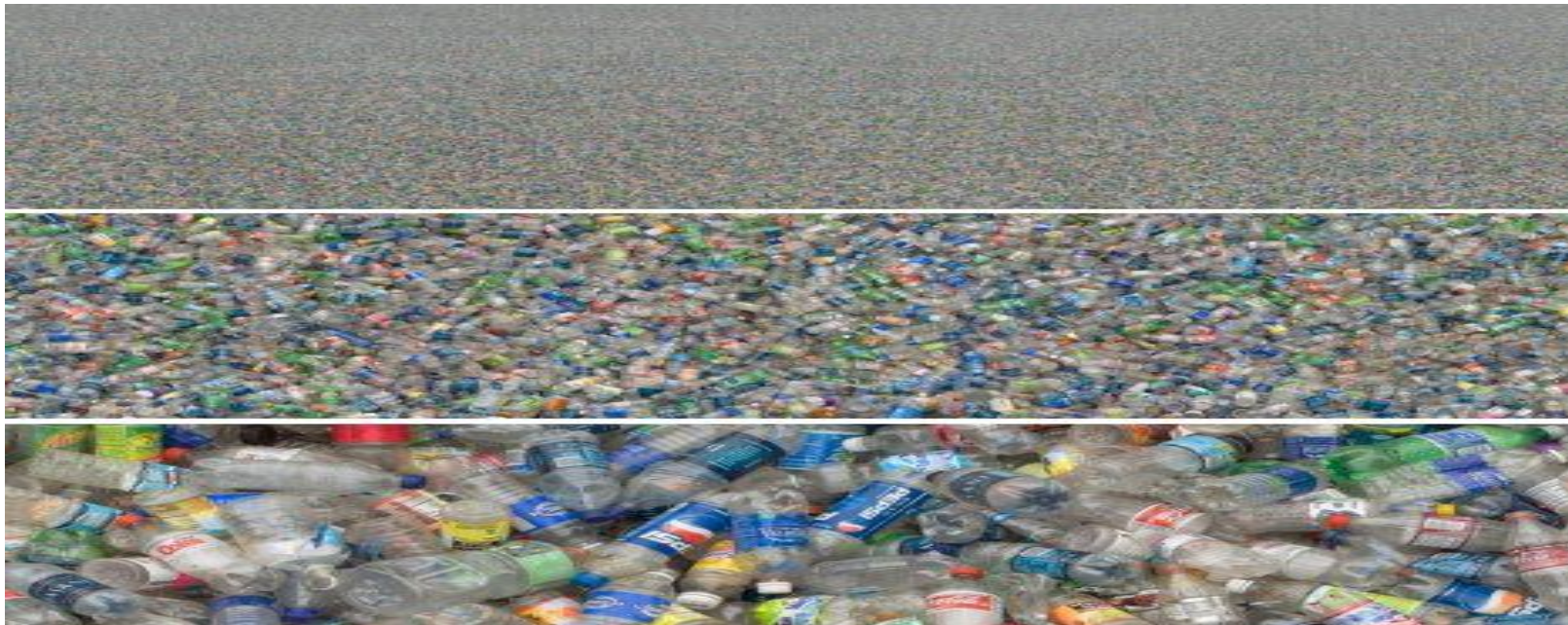
THE RISE AND DEMISE OF A MODERN MIRACLE

A film by
Ian Connacher



4} Plastic bags are non-biodegradable

And one of the worst environmental effects of plastic bags is that they are non-biodegradable. The decomposition of plastic bags takes about 1000 years.



3} Plastic bags kill animals

About 100,000 animals such as dolphins, turtles, whales, penguins are killed every year due to plastic bags. Many animals ingest plastic bags, mistaking them for food, and therefore die. And worse, the ingested plastic bag remains intact even after the death and decomposition of the animal. Thus, it lies around in the landscape where another victim may ingest it.





WHAT IS PLASTIC POLLUTION?

- Is the accumulation of plastic objects in the Earth's environment that adversely affects wildlife, wildlife habitat and humans.



Causes of Plastic Pollution

IMPROPER DISPOSAL OF GARBAGE

In poor countries where there are incompetent non-existent solid waste management bodies, the trash simply stays on the street or ends up in dumps and accumulates.

OVERUSE OF PLASTIC

Since plastic is inexpensive, it can be mass produced and distributed easily. As a result, the market is flooded with plastic products and though many are reusable, consumers insist on purchasing more.

URBANIZATION AND POPULATION GROWTH

As the world becomes more urbanized and population grows so does plastic production, plastic consumption and plastic pollution.



Causes of Plastic Pollution

INDUSTRY

Since humans have mastered sea travel; many industries have boosted and seen a great profit out of it.

BURNING OF PLASTIC

Plastic can poison our atmosphere. It is because of the toxic chemicals used to create this material and when it is burned, it vaporizes and leads to various respiratory illnesses.

PLASTIC CREATION

When plastic is being made in factories, many hazardous chemicals are emitted into the atmosphere which can lead to inclement atmospheric conditions.

Ways to Mitigate Plastic Pollution

PLASTIC BAN



CLEAN UPS



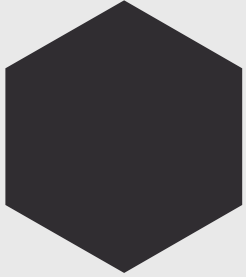
Ways to Mitigate Plastic Pollution

APPLICATION OF
REDUCE, REUSE,
RECYCLE AND REFUSE





SCARY FACTS ABOUT PLASTIC



There is an Island called the Great North Pacific Garbage Patch that is now 3x bigger than France.



More plastic has been produced in the last ten years than the entire last century.



Plastic Bags can be found at the deepest point in the sea, the Mariana's Trench.



There are enough plastic bottles in the ocean to circle the earth four times.



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