



# Microplastics

## Introduction

### ▪ About:

- Plastic pollution that ends up in the ocean deteriorates and breaks down and ends up as [Microplastics](#).
- **Microplastics are plastic particles less than 5mm in diameter.**

### ▪ Classification:

- **Primary Microplastics:** They are tiny particles **designed for commercial use and microfibers** shed from clothing and other textiles.
  - E.g. **microbeads** found in personal care products, **plastic pellets** and plastic fibres.
- **Secondary Microplastics:** They are **formed from the breakdown of larger plastics** such as water bottles.

## Menace of Microplastics

- **Marine Debris:** According to the [IUCN](#), at least 8 million tonnes of plastic end up in the oceans every year and **make up about 80% of all marine debris** from surface waters to deep-sea sediments.
  - As per [UNEP](#), in the last four decades, concentrations of these particles appear to have increased significantly in the surface waters of the ocean.
- **Impact on Marine Life:** The most visible and disturbing impacts include **suffocation and entanglement of hundreds of marine species**.
  - Marine organisms such as fish, crabs and prawns consume these microplastics **misidentifying them as food**.
- **Impact on Humans:** Humans consume these marine animals as seafood which leads to several health complications.
  - A study conducted by the [World Wide Fund for Nature](#) revealed that an **average person consumed 5 grams of plastic**.
- **WHO's Stand on Microplastics:** The [World Health Organization \(WHO\)](#) claims that the level of microplastics in drinking-water is not yet dangerous for humans but called for more research into potential future risk.
  - **Microplastics larger than 150 micrometres are not likely to be absorbed by the human body** but the chance of absorbing very small microplastic particles, including nano-sized plastics, are higher.

## Initiatives Taken

### ▪ Global Initiatives:

- **Global Partnership on Marine Litter (GPML):** The GPML was launched at the [Earth Summit](#) in 2012 in response to a request set out in the **Manila Declaration**.
  - Under the Manila Declaration, 65 signatories reaffirmed their **commitment to develop policies to reduce and control wastewater, marine litter and pollution from fertilizers**.
- **G7 Summit:** At the 2015 [G7 summit](#) in Bavaria, Germany, the risks of microplastics were acknowledged in the Leaders' Declaration.
- **GloLitter Partnerships Project:** Launched by the [IMO](#) and [FAO](#), it aims to **prevent and reduce marine plastic litter from shipping and fisheries**.
  - 30 countries including India have joined this global initiative to tackle marine litter.
- **London Convention, 1972:** The [1972 Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter](#) was signed to control all sources of marine pollution and prevent pollution of the sea through regulation of dumping into the sea of waste materials.
  - The **1996 Protocol to the London Convention** (the London Protocol) and the **1978 Protocol to the International Convention for the Prevention of Pollution from Ships (MARPOL)** are other similar initiatives.
- **World Environment Day, 2018:** It was hosted in India, the world leaders vowed to “Beat Plastic Pollution” & eliminate its use completely.
- **Plastic Pacts:** The [Plastics Pacts](#) are business-led initiatives to transform the plastics packaging value chain for all formats and products.
  - They bring together everyone from across the plastics value chain to implement practical solutions.
  - **The first Plastics Pact was launched in the U.K. in 2018.**
- **India-Specific Initiatives:**
  - **Elimination of Single Use Plastic:** In 2019, the Prime Minister of India pledged to [eliminate all single-use plastic in the country by 2022](#), with an immediate ban in urban Delhi.
  - **Important Rules:** [Plastic Waste Management Rules, 2016](#) state that every local body has to be responsible for setting up infrastructure for segregation, collection, processing, and disposal of plastic waste.
    - Plastic Waste Management (Amendment) Rules 2018 introduced the concept of [Extended Producer Responsibility \(EPR\)](#).
  - **Un-Plastic Collective:** [Un-Plastic Collective \(UPC\)](#) is a voluntary initiative launched by the **UNEP-India, Confederation of Indian Industry and WWF-India**.
    - The Collective seeks to minimise externalities of plastics on the ecological and social health of our planet.

### Extended Producer Responsibility (EPR)

- EPR is a **policy approach under which producers** are given a significant responsibility – financial and/or physical – for the **treatment or disposal of post-consumer products**.
- Assigning such responsibility could in principle provide incentives to prevent wastes at the source, promote product design for the environment and support the achievement of public recycling and materials management goals.

### Issues Associated

- **Under-Researched Field:** The microplastics are under-researched, probably because it is **hard to identify** them.
  - One can't recognise them with the naked eye, sophisticated instruments like **spectrophotometers are needed.**
  - The **impact of microplastics on the ecologically rich areas** like mangroves, coral reefs and kelps is **not studied well** too.
- **Availability in Remote Areas:** Microplastics, in recent times, are recorded even in the remotest of places; [Mount Everest](#), [Arctic snow](#), Icelandic glaciers, the French Pyrenees, and the depths of the Mariana Trench.
  - They pose a hazard as plastics pollutants in such areas **outpace the ability of governments to collect and manage waste.**
- **Irresponsibility on Government's Part:** Successive governments in India have issued waste management rules, but **dropped the ball on implementation.**
  - Moreover, the **cities have failed to implement existing rules** on ending single-use plastics, waste segregation, recycling labels on packaging, extended producer responsibility for manufacturers and recovery of materials.
- **Incapability of Current Degradation Mechanisms:** The existing plastic degradation mechanisms such as **photodegradation** (using sunlight) and **biological degradation** (using microbes) are ineffective as they only breakdown the microplastics rather than degrading them completely.

## Way Forward

- **Understanding Actual meaning of Swachh Bharat:** Swachh Bharat must mean not merely keeping waste out of sight, achieved through costly dumping contracts, but **sharply reduced generation, full segregation and recycling.**
  - Awareness must be created among the common people regarding the impact of microplastics.
- **Combination of Degradation Mechanisms:** A **combination of photo and biological degradation** systems for **effective and complete decomposition of microplastics** has been suggested.
- **International Collaboration:** Plastic waste around the world demands a new global treaty modelled on the [Montreal Protocol](#) and the [Paris Agreement](#).
  - The global problem of plastics will only be solved if all countries and decision-making policies decide to monitor microplastics along their respective coasts and also implement orders to use only biodegradable plastics.
- **Role of Government:** Plastic consumption can be reduced to ensure the reduction in the level of microplastic pollution.
  - The **use of single-use plastic can also be regulated** to ensure proper waste management.
  - Government, industry and the community shall work together to significantly reduce the amount of litter seen along beaches and in oceans.
- **Initiatives at Individual Levels:** Personal initiatives such as **zero-waste trips, shunning disposable** and using own utensils, quitting the use of bottled water and giving up plastic packaging are some of the steps that every citizen can take to curb microplastic pollution.
- **Economic Support for Recycling Projects:** The economical support including **tax rebates**, R&D funds, technology incubation, [Public-Private Partnerships](#) and support to projects that recycle single-use items and turn waste into a resource can be enforced.

