



Alternative of Single-use Plastics

Why in News

Recently, the researchers at the **Indian Institute of Science, Bengaluru (IISc)** have found a way to make a **substitute for [single-use plastic \(SUP\)](#)** that can, in principle, help mitigate the problem of accumulating **[plastic waste](#)** in the environment.

Key Points

▪ About the Research:

- In the research, **Non-edible Castor** oil was used in this process of making the polymer which involves allowing them to react with the cellulose (from **[agriculture stubble](#)**) and **di-isocyanate compound**.
- These polymers can be moulded into sheets having properties suitable for making bags, cutlery or containers.
- The material so made is **biodegradable, leak-proof and non-toxic**.

▪ Possible Advantages:

- **Addressing the Problem of Single use Plastics (SUP):** Given the surge in the usage of single use plastics and the challenge of managing the landfills choked with SUPs, such alternatives could bring **paradigm shift especially in the packaging sector**, the largest consumer of SUP.
- **Tackling Agricultural Stubble Problem:** Agricultural stubble burning is responsible for air pollution in several northern states in India.
 - In Delhi, for example, the **[air quality index](#)** dips to indicate “severe” or “hazardous” level of pollution every winter, and this is due in part to the burning of agricultural stubble in the surrounding regions.
 - Using agriculture stubble for replacement of single use plastics will not address the problem of air pollution, but will generate additional income opportunities for farmers also.
- **Use in Healthcare Facilities:** As the material is biodegradable and non-toxic, researchers are planning to use the material for healthcare applications also.

▪ Other Alternatives to Single-Use Plastics:

- Long-lasting plastic alternatives that are available right now are, Stainless steel, glass, Platinum Silicone, Bamboo, pottery and ceramics, etc.
- Other than these, **[bioplastics](#)** can be used to replace traditional plastics.
 - Bioplastics are a type of plastic that can be made from natural resources such as vegetable oils and starches.

▪ Need to Address Plastic Pollution:

- According to a report by the **[Central Pollution Control Board of India](#)**, for the year 2018-2019, 3.3 million metric tonnes of plastic waste were generated by Indians.

- Moreover, several reports suggest that it is an underestimation.
- Another alarming statistic is that of all the plastic waste produced in the world, 79% enters the environment.
- Only 9% of all plastic waste is recycled.
- Accumulation of plastic waste is detrimental to the environment and when this waste finds its way into the sea, there can be major harm to aquatic ecosystems, too.
- SUP is so cheap and convenient that it has replaced all other materials from the packaging industry but it takes hundreds of years to disintegrate.

Initiatives to Curb Plastic Waste

- [Rules for Banning Single-Use Plastics from 1st July 2022](#)
- [Swachh Bharat Mission](#)
- [India Plastics Pact](#)
- [Project REPLAN](#)
- [Un-Plastic Collective](#)
- [GoLitter Partnerships Project](#)

Way Forward

- **Circular Economy:** Countries must embrace [circular and sustainable economic](#) practices throughout the plastics value chain to reduce plastic pollution.
 - A circular economy depends on reuse, sharing, repair, refurbishment, remanufacturing and recycling of resources to create a closed-loop system, minimising the use of resources, generation of waste, pollution and carbon emissions.
- **Behavioural Change:** Citizens have to bring behavioural change and contribute by not littering and helping in waste segregation and waste management.
- **Extended Producer Responsibility:** At the policy level, the concept of [Extended Producer Responsibility \(EPR\)](#), already mentioned under the 2016 Rules, has to be promoted.
 - 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.

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