

What is Biotransformation Technology?

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Why in news?

- A UK-based startup, based at Imperial College in London, claims to have developed a technology that could alter the state of plastics and make them biodegradable.

- It claims the technology would digest the plastic packaging waste naturally with the help of microbes and biodegrade the waste without leaving behind any microplastics.
- The company calls the process “biotransformation”.

What is Biotransformation technology?

- Biotransformation is a process by which organic compounds are transformed from one form to another to reduce the persistence and toxicity of the chemical compounds.
- Biotransformation technology is a novel approach to ensure plastics that escape refuse streams are processed efficiently and broken down.
 - The term refuse stream refers to the flow of solid waste materials that are generated from various sources.
 - The term is often used in the context of waste management and recycling.
- Plastics made using this technology are given a pre-programmed time during which the manufactured material looks and feels like conventional plastics without compromising on quality.
- Once the product expires and is exposed to the external environment, it self-destructs and biotransforms into bioavailable wax.
- This wax is then consumed by microorganisms, converting waste into water, CO₂, and biomass.

Why do we need this?

- As per the government, India is generating 3.5 billion kgs of plastic waste annually.
- The per capita plastic waste generation in India has also doubled in the past five years. Of this, a third comes from packaging waste.
- Also, as per one estimate, E-commerce giant Amazon generated an estimated 321 million kilograms (709 million pounds) of plastic from packaging waste in 2021 alone.
- These plastic packaging often ends up in the world’s freshwater and marine ecosystems as pollution.

Where can this technology be used?

- Food packaging and health care industries are the two prime sectors that could use this technology to reduce waste.
- The increase in cost is relatively small compared to conventional plastic that does not contain this technology.

What are the steps taken by the Indian government to address the issue of plastic waste?

- The Indian government has launched multiple initiatives to move the country towards sustainability.
- They introduced a plastic waste management gazette to help tackle the ever-growing plastic pollution caused by single-use plastics.
- It imposed a **ban on single-use plastics** to bring a stop to its use in the country.
- The **National Dashboard on Elimination of Single Use Plastic and Plastic Waste Management** brings all stakeholders together to track the progress made in eliminating single-use plastic and effectively managing such waste.
- An **Extended Producer Responsibility (EPR) portal** helps in improving accountability traceability, and facilitating ease of compliance reporting in relation to EPR obligations of the producers, importers and brand-owners.
 - EPR policies typically require producers to take responsibility for the entire life cycle of their products, from design and production to end-of-life disposal or recycling.
- India has also developed a mobile app to report single use plastics grievances to check sale, usage or manufacturing of single use plastics in their area.

What are the alternatives to reducing plastic waste?

- A switch to jute or paper-based packaging could potentially cut down plastic waste.
 - This could also build sustainability within the paper industry, and save on the import bill on ethylene solutions.
- The wooden packaging is yet another alternative, but that will make the packaging bulkier and increase cost.
- The Government of Tamil Nadu, in Chennai, organised National Expo and Conference of Startups to raise awareness on alternatives to single-use plastics.
- The alternatives showcased were made using coir, bagasse, rice and wheat bran, plant and agricultural residue, banana and areca leaves, jute and cloth.

Q1) What is single use plastic?

Single-use plastic refers to any plastic item that is designed to be used only once before it is disposed of. This includes plastic bags, straws, utensils, packaging, and bottles. These items are often used for a very short period of time, sometimes just a few minutes, before they are discarded.

Q2) What is Extended Producer Responsibility (EPR)?

Extended Producer Responsibility (EPR) is a policy approach that makes producers responsible for the environmental impact of their products throughout the product lifecycle, including after the product is sold and used by consumers. EPR is based on the principle that the producer, rather than the consumer or the government, should bear the costs of managing and disposing of their products at the end of their useful life.

Source: [Explained | What is Biotransformation technology](#) | [MedCrave](#)

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