

## Bio-Based Chemicals

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### Bio-Based Chemicals Latest News

India has prioritised bio-based chemicals and enzymes as a priority area under the Department of Biotechnology's **BioE3 policy**.

### About Bio-Based Chemicals

- Bio-based chemicals are industrial chemicals **produced using biological feedstocks** like sugarcane, corn, starch, or biomass residues.
- These are often produced through **fermentation or enzymatic processes**.
  - **Examples: Organic acids** (such as lactic acid), bio-alcohols, solvents, surfactants, and intermediates used in plastics, **cosmetics, and pharmaceuticals**.
- Unlike conventional chemicals, for which the largely available supplies are obtained through sources of fossil fuel, bio-based alternatives **reflect a sustainable solution**.

### Ecological Benefits of the Bio-Based Chemicals

- The bio-based industry **reduces reliance on fossil fuels** by applying renewable feedstocks.
- **Low production of harmful byproducts:** Biobased methods generate **much lower amounts of hazardous waste** than the conventional petroleum-based methodologies.
- **Reduced Carbon Footprint:** The production of biochemicals **generally requires less energy** than their corresponding petroleum-based equivalents.
- **Waste Minimization and Circular Economy:** With bio-based chemicals mostly coming from organic waste resources, development of the circular economy will be based on recycling, efficiency in the use of resources.

## Challenges and Risks

- **Cost Disadvantage:** Higher production cost compared to petrochemical alternatives, which creates an entry level barrier.
- **Feedstock:** Availability of reliable feedstocks and supporting infrastructure required to produce different categories of bio-based chemicals at scale.
- **Market Adoption:** Uncertainty about adapting bio-based chemicals as substitutes over fossil fuel based chemicals.

Source: **TH**

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