

The chemical industry and basic human needs

- Human beings traditionally relied on direct use of unprocessed natural substances to satisfy basic needs- firewood, fruits, shelter, medicine.
- A variety of processing techniques have been developed to optimize the natural products to new products to suit these needs better.
- The processes of changing the physical and chemical composition or structure of natural substances, or of synthesizing new materials are part of the chemical process technology. Such processes add value to natural resources and create wealth by increasing the value of natural substances.
- Transformation of methods of modifying natural substances, including chemical modification techniques have led to the development of modern chemical industry.

Fine and specialty chemicals

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- Fine chemicals are usually single entities while specialty or performance chemicals are often mixtures of substances and proprietary products which are formulated with carriers or excipients and traded on the basis of what they do.
- “Commoditized” specialty chemicals contain commodity chemicals as active ingredients.
- Ethylene glycol (99%) is a commodity chemical which becomes a “commoditized specialty” when diluted with water, fortified with a colorant and sold as “super-antifreeze” in the supermarket.

Manufacturing chains, value addition

- Primary manufacturing- Making the active ingredients from starting commodity chemicals
- Secondary manufacturing-Formulation of the active chemicals into products.
- Secondary manufacturing includes use of excipients which confer bulkiness, stability, colour, and taste. This process is followed by tablet or capsule formation and packing before sale.
- The price differential between the active pharmaceutical ingredient (API) and the starting materials can be quite high.