

CHEMICAL AND PETROCHEMICAL INDUSTRY

1. OVERVIEW

Historical development

Chemical industry is one of the oldest industries in India. The industry, including petrochemicals, and alcohol-based chemicals, has grown at a pace outperforming the overall growth of the industry.

The Chemicals Industry comprises both small and large scale units. The fiscal concessions granted to small sector in mid-eighties led to establishment of large number of units in the Small Scale Industry (SSI) sector. Currently, the Indian Chemical Industry is in the midst of major restructuring and consolidation phase. With the shift in emphasis on product innovation, brand building and environmental friendliness, this industry is increasingly moving towards greater customer-orientation. Even though India enjoys an abundant supply of basic raw materials, it will have to build upon technical services and marketing capabilities to face global competition and increase its share of exports.

Chemical fertilizers and pesticides played an important role in the "Green Revolution" during the 1960s and 1970s. The consumption of pesticides in India is low in comparison to other countries. Indian exports of agrochemicals have shown an impressive growth over the last five years. The key export destination markets are USA, UK, France, Netherlands, Belgium, Spain, South Africa, Bangladesh, Malaysia and Singapore.

The Government is promoting research on the use of alternative and unarmful pesticides using neem seeds. A country programme entitled "Development and Production of Neem Products as Environment Friendly Pesticides" is being undertaken by the Department of Chemicals & Petrochemicals with the financial assistance of United Nations Development Programme (UNDP)/ United Nations Industrial Development Organization (UNIDO). The project is being implemented at two locations viz., Nimpith in West Bengal and Nagpur in Maharashtra to promote production, processing and use of neem-based products, thereby aiding wasteland development, generating rural employment and providing farmers with eco-friendly/bio-degradable pesticides.

Petrochemical industry is a cyclical industry. Globally the petrochemical industry is characterized by sluggish demand and volatile feedstock prices. In India, consumption of petrochemical products is still one of the lowest in the world. For example in case of polyester, India's per capita consumption is 1.4 kg compared to 6.6 kg for China and 3.3 kg for the world. In case of polymers, per capita consumption of India is 4 kg and is about a fifth of the world. Demand for the petrochemicals products has grown in double digits for a long period.

Current scenario

The global chemical market is estimated at approximately USD 1.7 trillion. Western Europe is the largest chemical-producing region followed by North America and Asia.

The Indian Chemical Industry ranks 12th by volume in the world production of chemicals. The industry's current turnover is about USD 30.8 billion which is 14 per cent of the total manufacturing output of the country.

In terms of consumption, the chemical industry is its own largest customer and accounts for approximately 33 per cent of the consumption. In most cases, basic chemicals undergo several processing stages to be converted into downstream chemicals. These in turn are used for industrial applications, agriculture, or directly for consumer markets. Industrial and agricultural uses of chemicals include auxiliary materials such as adhesives, unprocessed plastics, dyes and fertilizers, while uses within the consumer sector include pharmaceuticals, cosmetics, household products, paints, etc.

India also produces a large number of fine and speciality chemicals, which have very specific uses and are essential for increasing industrial production. These find wide usage as food additives, pigments, polymer additives, anti-oxidants in the rubber industry, etc. Some of the important manufacturers of speciality chemicals include NOCIL, Bayer (India), ICI (India), Hico Products and Colourchem.

The Dyestuff sector is one of the important segments of the chemicals industry in India, having forward and backward linkages with a variety of sectors like textiles, leather, paper, plastics, printing ink and foodstuffs. The textile industry accounts for the largest consumption of dyestuffs at nearly 80 per cent. From being importers and distributors in the 1950's, it has now emerged as a very strong industry and a major foreign exchange earner. India has emerged as a global supplier of dyestuff and dyes intermediates, particularly for reactive, acid, vat and direct dyes. India accounts for 6 per cent of the world production of dyes.

2. CURRENT STATUS

Industry Segments

The wide and diverse spectrum of products can be broken down into a number of categories, including inorganic and organic (commodity) chemicals, drugs and pharmaceuticals, plastics and petrochemicals, dyes and pigments, fine and specialty chemicals, pesticides and agrochemicals, and fertilizers.

2.1.1 Basic Inorganic and Organic Chemical Industry

The Basic inorganic chemical and organic chemical industry constitutes a major segment of the country's economy. Important chemicals in this category are Soda Ash, Caustic Soda, Liquid Chlorine, Calcium Carbide, Acetic Acid, Methanol, Formaldehyde, Phenol, Acetone.

These are raw materials for industries like detergents, toothpaste, plastics, drugs, petroleum refining, etc. 10 per cent of the Chlor-Caustic Plants use Membrane Cell Technology, which will find higher usage, as no new capacities are allowed for the mercury cell process

2.1.2 Drugs & Pharmaceuticals

The Indian Pharmaceutical Industry is the largest in the developing world. The industry currently produces a wide range of bulk drugs. In fact, India is currently a world leader in manufacture and export of basic drugs such as ethambutol and ibuprofen.

India is emerging as one of the largest and cheapest producers of pharmaceuticals in the world, accounting for nearly 8.5 per cent of the world's drug requirements in terms of volume, and ranks amongst the top 15 drug manufacturing countries in the world.

2.1.3 Pesticides & Agrochemicals

India is currently the largest manufacturer of Pesticides in Asia, second only to Japan. In agrochemical, we manufacture significant quantities of synthetic pyrethroids, such as fenvalerate and cypermethrin, endosulphane, and organophosphate range of agrochemicals, including monocrotophos. India is also a dominant producer of isoproturon, a weedicide accounting for nearly 25 per cent of the world-wide production.

2.1.4 Petrochemicals

The petrochemical industry of India is less than 40 years old. Petrochemicals cover basic chemicals like Ethylene, Propylene, Benzene and Xylene. The other major components are the intermediates like MEG, PAN and LAB etc, Synthetic fibres like Nylon, PSF and PFY, Polymers like LDPE/HDPE, PVC, Polyester and PET etc and Synthetic rubber like SBR, PBR. The sector has a significant growth potential. Although the current per capita consumption of petrochemicals products is low, the demand for the same is growing: The major players in this field include

Reliance, Indian Petrochemicals Limited (IPCL), National Organic Chemical Industry Ltd (NOCIL) and Gas Authority of India Ltd (GAIL) etc.

2.1.5 Dyes & Pigments

Nearly 80 per cent of the dyes manufactured is utilised by the textile industry, with the balance going to into paints, printing inks, rubber & leather. Just like Agrochemicals, per capita consumption of dyes too is very low (400 gms) as compared to developed countries like USA (15 kgs). However India is a major exporter of dyes, mostly due to ban of production of some of the dyes and intermediates in the developed countries due to pollution

Major Players

- . • Paints - Asian Paints, Goodlass Nerolac, ICI, Courtalds, Jenson & Nicholson
- . • Dyes & Intermediates - Color Chem (Hoechst), Clariant, IDI, Atul, Mardia etc.
- . • Inks - Coates, Hindustan Inks, Sakata
- .

2.1.6 Fine & Specialty Chemicals

70 per cent of the Fine Chemicals produced in India find their way into the Pharmaceutical and Agrochemical sectors. Performance chemicals geared to customer need are being developed locally particularly since there is growing demand for Speciality chemicals like Sunscreens, Antioxidants, Biocides, etc.

Manufacturers of Fine Chemicals and specialities have major strengths in basic research facilities available with CSIR laboratories such as NCL, IICT & RRLs as also corporate R & D centres. This ensures that development of process know-how; plant process design and engineers, detailed engineering design, commissioning assistance and even consultancy for re-engineering are available at low cost. This segment is also highly segmented with large number of players. Major Indian players are ION Exchange, Balmer Lawrie, Dai Ichi Karkaria. etc. The multinationals like Ciba, Hoechst, Foseco, Nalco Chemicals, Clariant, ICI etc too have significant share in the fast growing market.

2.1.7 Fertilizers

The Indian fertilizer industry has emerged as the fourth largest producer of fertilizers in the world after China, USA, Russia. Nitrogenous and phosphatic fertilizers are produced indigenously, while requests for potassic fertilizers are met through imports.

India has achieved near self-sufficiency in the inputs for the production of nitrogenous fertilizers, but for the production of phosphatic fertilizers, the country continues to rely on imports of raw materials (rock phosphate and sulphur and for intermediates such as phosphoric acid).

3. INVESTMENT POLICY AND INITIATIVES

3.1 Policy and initiatives to promote the sector

With a special focus on modernization, the Indian government takes an active role in promoting and advancing the domestic chemical industry. The Department of Chemicals & Petro-Chemicals, which has been part of the Ministry of Chemicals and Fertilizers since 1991, is responsible for policy, planning, development, and regulation of the industry.

In the private sector, numerous organizations, including the Indian Chemical Manufacturers Association, the Chemicals and Petrochemicals Manufacturers Association, and the Pesticides Manufacturers and Formulators Association of India, all work to promote the growth of the industry and the export of Indian chemicals. The Indian Chemical Manufacturers Association, for example, represents a large number of Indian companies that produce and export a number of chemicals that have legitimate commercial applications, but also can be used as precursors and intermediates for chemical weapons production.

3.2 Foreign Direct Investment (FDI) Policies

The procedure has been simplified for facilitating foreign direct investment. Most of the chemical items fall under the RBI automatic approval route for FDI/NRI/OCB investment up to 100% except the following

- . • Activities / items that require an industrial license
- . • Proposals in which the foreign collaborator has previous / existing venture/tie up in India in the same or allied field
- . • All proposals relating to acquisition of shares in an existing Indian company by a foreign/NRI investor
- . • All proposals falling outside notified sectoral policy/caps or under sectors in which FDI is not permitted

For other industries, Government approval is accorded through Foreign Investment Promotion Board (FIPB).

4. INVESTMENT OPPORTUNITIES/ HURDLES IN THE SECTOR

Due to its low cost infrastructure, India has potential of growth in exports. According to a report by McKinsey, India's manufactured exports have the potential to rise to \$300 bn by 2015. This defines an investment of \$50 bn in chemical industry alone.

India has the capacity for major value addition being close to Middle East. This is a cheap and abundant source for petrochemical feedstock.

In certain categories of chemicals India does have advantage for exports (dyes, pharmaceuticals and agrochemicals) by creating strategic alliances with countries like Russia and CIS countries. With the know-how available in the country there is a tremendous potential to grow and increase exports in dyestuff and agrochemical market.

Availability and abundance of raw materials for titanium dioxide and agro-based products like castor oil offer an opportunity to generate significant value addition. This, however, would require substituting their exports in raw form by manufacturing higher value derivatives.

The major challenges are quest for feedstock and knowledge management. Traditionally naphtha-based crackers have been providing feedstock to the industry. Today, they are being replaced by new gas-based crackers. India and China will pose a stiff competition to the Middle East due to the vibrant exports and large unexplored reserves of oil and gas. Indian government is acting as a facilitator by setting up LNG terminals and acquiring equity interests in overseas proven oil reserves. This will fuel rapid growth in chemical industry.