Chapter 2

2 Chemical Industry

2.1 CURRENT INDUSTRY SCENARIO

The size of the Indian Chemical industry is approximately Rs. 1200 billion. In terms of volume the Indian chemical industry ranks 12th amongst world production of chemicals. The rate of growth of the Indian chemical industry over the last five years has been double that of the Asian growth rate in chemicals sector.

2.2 GROWTH IN INDUSTRIAL SECTOR

Table 2-1 Growth in Industrial Sector (Private)

Industrial sector	Weightage in IIP	Growth				
		1995-96	1996-97	1997-98	1998-99	1999-00
Food products	9.080	6.8	3.5	-0.4	0.7	4.6
Beverage & tobacco	2.380	13.3	13.5	19.5	12.9	7.2
Textiles	2.540	35.7	9.5	8.5	-3.5	2.4
Cotton textiles	5.520	10.6	12.0	2.3	-7.7	6.9
Jute textiles	0.590	7.7	-4.6	16.9	-7.3	-1.0
Other textiles	2.260	14.7	10.5	18.5	2.8	12.0
Wood products	2.700	24.0	7.0	-2.6	-5.8	-16.8
Paper products	2.650	15.6	9.1	6.9	16.0	9.0
Leather, rubber, plastic products	1.140	14.2	9.4	2.2	8.1	10.6
Petroleum and coal products	5.730	7.8	2.0	5.2	11.3	-1.6
Chemical products	14.000	11.3	4.7	14.5	6.6	21.9
Minerals	4.400	21.9	7.7	13.8	8.2	22.8
Basic metals	7.450	13.1	15.8	6.7	-2.5	4.7
Metal products	2.810	-3.8	10.2	8.4	17.8	-4.2
Non-electrical machinery	9.570	19.5	5.2	5.6	1.1	16.7
Electrical machinery	10.170	8.1	4.0	6.6	6.4	6.6
Transport equipment	3.980	17.4	12.9	2.6	15.6	2.1
Miscellaneous industries	2.560	13.2	5.2	-2.7	5.8	-14.1
Overall growth in manufacturing		13.8	6.7	6.7	4.3	6.7

Source: CMIE

In India, the chemical industry has a weightage of 12.5% in the Index of Industrial Production (IIP Base: 1980-81 = 100). It holds 16.2% share of manufacturing segment in index of Industrial Production, which is an indication of the big role that it plays for the manufacturing sector in India as a whole.

The chemical industry in the Asia-Pacific region has grown faster than the global chemical industry and adds US $ 30 billion; worth of output every year. 45% of the total chemical products produced in the region are bulk organic chemicals, which also forms a major component in the export basket from the region. This region is fast emerging as a key player in global chemicals business and commands 30% share of global chemical market. In the Asia Pacific region, China & India are the largest markets.

2.3 CHEMICAL SECTORS: A REVIEW

To understand the scenario of the chemical industry in a better way, a study of the major chemical segments has been done. The focus of the study is to understand the global and domestic sales scenario; installed capacity, forecasted demand gap and critical issues of concern for the industry. The following section describes the salient features about each chemical sector.

a. Plastics / polymers

The industry has expanded significantly after the establishment of petrochemical complexes by companies such as National Organics and Chemicals Industries Limited (NOCIL), Indian Petrochemicals Corporation Limited (IPCL), and more recently, Reliance Industries Limited (RIL). Economic growth, improved availability of polymers and concern over depletion of scarce natural resources has established plastics as the material of choice in innumerable applications.

Despite global competition generated through lowered customs duty, the Indian industry is expanding at a whopping rate of 14% a year, which compares well with a global growth rate of 3 to 4%.

The end-user segments of plastic industry are broadly classified into

- Packaging (40% of overall demand)
- Consumer products
- Construction, Industrial products

The growth in the polymer industry is expected to be 50% by 2005 and 800% by 2020.

The unorganized sector dominates the numbers in each of these user segments, and thus it is difficult to acquire relevant data. Over 80% of the growth in plastics consumption in India has been in commodity plastics, which is quite distinct from the trend in developed countries where maximum growth is seen in the far more sophisticated engineering and automobile sectors.

The supplies have expanded from IPCL, Finolex and Reliance plants. With the start-up of Reliance's polypropylene plant, the position will change further. The total capacity of the plastic industry to process polymers is estimated at 48 Lacs TPA.

Market characteristics

Today, The Indian plastics industry is producing goods of the value of approximately Rs 17,000 Crores annually generated from some 23,000 units, most of these in the small-scale sector. The total investments are of the order of Rs 10,000 Crores. There are over 1,000 units, which contribute to the export effort and earn over Rs 1,600 Crores in foreign exchange, up from less than Rs 500 Crores only four years ago.

Major players

IPCL, GAIL, NOCIL, WBIDC, UB, RIL

There is no domestic production of styrene monomer (SM) in India, majority of polystyrene manufacturers in the country are compelled to import SM.

Another issue facing the industry is the irrational Sales Tax structure that prevails in the country. Due to the 15% Sales tax levy in Maharashtra in addition to Octroi charges, SSIs are forced to either shift out of Maharashtra or simply discontinue their projects. In many states, Octroi has already been abolished.

Import duties are being brought down in the country to honour the WTO agreement.

Outlook
Although per capita Indian consumption of plastics has risen from 0.96 kg in 1995-96 to about 3 kg in 1999-2000, it is still way below the world average of 17 kg. The outlook for the domestic plastic industry is quite bright. Given a good GDP growth and increasing purchasing power of middle-income groups, the demand for plastic goods will grow at a very good rate.

This coupled with the benefits of the proposed chemical estate makes it ideal for many plastic and polymer processing industries to set up their plants in the estate.

b. Dyestuff

Global Scenario
Taiwan and Korea are the largest players in the field of dyestuffs across the world followed by China, India and Japan. The major international players include Dystar, BASF, Ciba Specialties and Clariant. However, in terms of market share, European countries have remained the largest producers because they have concentrated on speciality products. Globally, reactive dyes account for 25% while disperse dyes account for 20% of total production. These two dyes have a dominant share in the world. On the other hand, market for Direct and VAT dyes and others have remained more or less stagnant. Global scene has witnessed large- scale mergers and acquisition and joint ventures in the past.

Domestic Scenario
Currently, there are about 40-50 units in the organized sector and 500-600 units in the unorganized sector. Approximately 90% of these units are concentrated in Gujarat and Maharashtra. The major players comprise Atul Products Jaysynth Dyechem, Meghmani Organics and Colortex. MNCs like BASF, Ciba Speciality and Clariant are also into trading of high performance speciality dyes in India.

Major raw materials are H-acid, Vinyl sulphone, Gamma acid and Tobais acid

These are all petrochemical based and are 40-50% costlier in India than in international market**. China has an advantage over India in terms of the cost of basic raw materials.**

Major issues of dyestuff industry
- Over capacity
- Small size of units
- Outdated technology
- Competition from China
- Lack of awareness of R&D benefits

Outlook
The dyes industry in India has lost its shine in the past few years and is today facing severe crisis in the domestic as well as international markets. The government needs to improve infrastructure facilities, make cheap power available and reduce the cascading effect of taxes. It needs to make finance available at low rates to install Effluent treatment plants in various companies. The government should also work towards making available raw materials at internationally competitive price. Primary raw materials like caustic soda and soda ash are much more expensive in India owing to anti-dumping duties. Similarly, Aniline oil, sodium nitrite, etc are much cheaper in China than in India.

In the current business environment, success and the winning strategy would depend upon innovative products, quality of the products, access to global R&D, compliance to global environmental norms, customer oriented approach and the ability to provide solutions rather than products.

The dyestuff industry currently is facing stiff competition from China, Taiwan and other countries. Though there is over-capacity in the market, looking at the views from various manufacturers from the segments, the chances of new units coming up are still there. But the investment is directly related to the kind of infrastructure provided for chemical effluent disposal, treatment and the cost of the same.

c. Speciality Chemicals

Speciality Chemicals are high value and low volume chemicals sold on the basis of performance rather than simple specifications. These are less capital intensive and more knowledge-based products instead. Their applications vary enormously and can include uses as cosmetic additives, water treatment products, dyes, sanitation agents, plasticizers, ion-exchange resins and agrochemicals. There is also a large range of uses as intermediate materials in which the fine chemicals form the starting block for other substances with a recognizable end use.

The speciality chemicals can be divided into **two groups – performance chemicals** and **fine chemicals.** The latter is largely used by pharmaceutical, pesticide and herbicide industries. The performance chemicals, on the other hand perform a specific function such as facilitating adhesion, improving flow of gas or oil through a pipeline, inhibiting corrosion, etc. It is through performance chemicals that the chemical industry interfaces with almost every other manufacturing industry e.g. textiles, petrochemicals, polymers process industry, rubber industry and so on.

According to the *TIFAC Vision 2020 study* on speciality chemicals "due to the increase in population to about 1.2 billion by 2011, the industry growth would need to be at least 2-3 times or more, including the compensation for current gaps in meeting the figures in some major chemical sector". It may be noted that growth in the speciality chemicals required to meet the projected demand by 2020 **is about 20 times,** which is the highest amongst all other areas of chemical sector.

Textile Speciality Chemicals
The total world fibre consumption forecast depicts a growth of 2.70 per cent per annum. The global fibre consumption was at 6.74 kg per head in 1985. The market is quite large and encompasses a wide spectrum of products. Therefore, chemicals is this sector, will

have to be turned and twisted in terms of production and marketing strategies to fulfil the growing needs.

Polymer Additives
Polymer additives are essential for improvement of performance, processing and by and large, the profitability of polymer resins. As a matter of fact, the well-known thermoplastic PVC could not be commercialized until plasticizers were developed. There are different types of additives and the range includes: Antioxidants, thermal stabilizers, lubricants, processing aids, impact modifiers, filler colorants, flame retardants, antistatic agents and many more. India is at the threshold of an expansion in consumption of plastics and the per capita consumption of plastics and therefore additives is expected to increase manifold in the following decade.

Rubber Chemicals
The processing of rubber involves incorporation of fillers, vulcanizing agents, plasticizers, tracifiers, accelerators, antidegradants, etc. which either makes processing easier/faster or imparts specific properties to the finished rubber product.

Major Players
India : ION Exchange, Balmer Lawrie, Dai Ichi Karkaria, etc.
MNC : Ciba, Hoechst, Foseco, Nalco Chemicals, Clariant, ICI etc.
Major end user segments - Textile, leather, paper, detergent, rubber, paints, polyester, oil and gas etc.

Some of the speciality chemicals are as follows:

Adhesives	Thickeners, tackifiers, binders, stabilizers
Construction Chemicals	Sealant, flame retardants, concrete setting accelerators / retarders, mastics
Cosmetic Additives	Moisturizers, UV absorbers, masking agents, emulsifiers, proteins
Diagnostic Aids	Dyes for angiogram, chemicals for other diagnostics (as NMR)
Elastomers	SBR, Silicones, Puf, EVA
Electronic Chemicals	Electronic substrates, packaging materials, plating chemicals, photoresistants, etching agents, cleaners & strippers, dopants, special gases
Enzymes (Indl)	Bates for leather, enzymes for pharmaceuticals, food processing industries
Flavours & Fragrances	Speciality esters, bases, concentrates
Food Additives	Antioxidants, Flavours, food dyes
Fuel Additives	Catalysts, stabilizers, functional additives
(Functional) Dyes	Dyes for reprographics & dyes for electronic chemicals
Foundry Chemicals	Binders, resins, mould release agents
Indl Cleaning Agents	Solvents based on Spl. Esters & alcohols
Lube Additives	Antioxidants, dispersants, antiwear & EP additives, pour point depressants, viscosity modifiers & antifoamers
Metal Plating & Finishing Chemicals	Cyanates, electrolytic Au/Ag plating, electrolytic / electroless Cu plating chemicals
Mining Chemicals	Flocculents, dispersants, thickeners
Oilfield chemical	Pour point depressants, corrosion inhibitors, demulsifiers, EP additives, thickeners, fluid loss control agents, stabilizers, mud additives, cement additives, EOR chemicals
Paint Additives	Wetting agents, dispersants, thixotropic, antisettling, antifoaming agents, defoamers, pH stabilizers, emulsifiers, biocides, corrosion inhibitors, plasticisers, thickeners, antiflotation agents, flow control agents
Paper Additives	Retention Aids, formation aids, drainage aids, flocculent, defoamers, wet web strength additives, defoamers, biocides, dry strength additives, sizing agents, creping agents, dispersants, binders
Photographic Chemicals	Fixing agents, toner, photoresistants

Polymer Additives	Speciality plasticisers, antioxidants, UV stabilizers, modifiers, flame retardants, antistatic agents
Rubber Chemicals	Antioxidants, antizonants, vulcanisation accelerators / retarders, modifiers, inhibitors
Surfactants	Anionic & nonionic surfactants mainly used in India. Wetting agents, dispersants, emulsifiers, defoamers, antifoamers, detergency aids
Textile Auxiliaries	Sizing agents, leveling agents, dispersants, detergents, acid release agents, dye fixing agents, solvents, anticreasing agents, biocides
Water Management Chem	Flocculent, dispersants, corrosion, inhibitors, biocides

Outlook

The speciality chemicals are driven by research and development activities and a chemical estate with facilities like testing laboratory will definitely give an edge to units, which are set-up there. The units would also have an advantage because of excise exemptions that have been provided by the government.

d. Pesticides

India is a large agricultural economy which is the major user of pesticides but the average Indian consumption is very low (approximately 1/20th of world average). Market size of the pesticide industry is 100,000 MT (in terms of technical grade)/ US$ 800 million. There are two types of producers: Technical - 40 nos and Formulators - above 500 nos.

Growth

The industry is growing and expected to grow in future at the rate of 10% per annum.

Major players:

India: United Phosphorus, Rallis and Excel Industries.

MNC: Hoechst Agrevo, Novartis, Bayer etc.

Table 2- 2 Significant exports observed in the past

Production ('000 MT)

Product	Installed Capacity	92 - 93	93 - 94	94 – 95	95 - 96	96 - 97	97 - 98	98 - 99
Insecticides	81.9	73.4	71.8	75.6	77.7	84.1	60.4	66.0
Fungicides	10.7	5.3	5.5	6.0	6.6	7.3	9.2	8.0
Herbicides	4.8	2.0	1.3	1.5	1.4	1.6	1.9	1.7
Weedicides	10.3	2.2	2.7	5.1	8.5	7.3	7.33	6.7
Rodenticides	0.9	0.27	0.51	0.46	0.40	0.40	0.5	0.5
Fumigants	1.6	1.0	1.5	1.8	1.8	1.9	1.6	1.8
Total	110.2	84.17	83.31	90.46	96.40	102.6	80.9	80.9

Technical grade pesticides have been growing at the rate of 10% in the last few years.

e. Petrochemicals

Major Players

The refining capacity of 69.14 million metric Tonnes per annum (MMTPA) as on April 1st, 1999 has increased to 109.04 MMTPA as on January 1st, 2000, making the country almost self-sufficient in the refining sector. There are 17 refineries in the country of which seven are owned by Indian Oil Corporation (IOC), two each by Hindustan Petroleum Corporation (HPCL) and Madras Refineries Ltd. (MRL), one each by Bharat Petroleum Corporation Ltd. (BPCL), Cochin Refinery Ltd. (CRL), Bongaigaon Refinery and Petrochemicals (BRPL), Numaligarh Refineries Ltd. (NRL), Mangalore Refinery & Petrochemicals (MRPL) and Reliance Petrochemicals Ltd. (RPL).

Immediate Challenges

- The quality of crude oil is measured in terms of its lightness, sweetness and is generally categorized as light or heavy, sweet and sour.
- The big challenge would be of maintaining productivity, particularly of middle distillates and fuel oils.
- Tightening of environmental regulations has forced refineries to produce green fuels by upgrading the quality of transport fuels i.e. motor spirit and high-speed diesel.

Salient Issues

The primary factors that influence refinery margins are crude prices, transportation costs, production of high value products, operating costs and product quality. The location of a refinery is probably the strongest influence on its competitive position and profitability. Refinery margins will also be based upon import parity with Singapore and Arabian Gulf as supply sources. The movement of large quantity of crude from Persian Gulf to India will lead to reduction in freight charges. Higher quantity of shipment leads to cheaper transportation.

In a deregulated market and in an environment of increasing capacities, the refineries will be forced to seek higher returns in order to survive. Various routes are being adopted world wide for improving refining margins such as upstream integration into crude/natural gas exploration/ production, downstream integration into petrochemicals and power and sharing of facilities between nearby refineries.

Upstream Integration:

This area has seen the least activity in India till date. The government had approved the award of 25 oil exploration blocks in India to various bidders under the New Exploration and Licensing Policy. Out of the 25 blocks, 12 were bagged by Reliance while ONGC bagged 5 blocks on its own, two blocks in combination with IOC and one with GAIL. This would, hopefully, mark the beginning of more such upstream integration by the Indian refineries.

Shared facilities lead to judicious infrastructure investment, optimum utilization of common facilities, option of interchanging feedstock and thereby exploiting hidden synergies, all of which are cost cutting opportunities. Refineries could consider having a common pipeline, common sources of power and exchange of feedstock.

Downstream Integration

Refineries should critically evaluate investments into downstream sector such as power, petrochemicals etc.

Power

At present, there is a power deficit in the country. Except two states i.e. Maharashtra and Gujarat, all other states are facing power deficit. One of the recent trends in generation of power is through conversion of refinery residues by putting up Integrated Gasification Plants & Combined Cycle power plants (IGCC). Gasification is the process in which a carbonaceous fuel is converted into a gaseous fuel suitable for combustion and power generation.

Petrochemicals **– There are prospects of a high growth rate in the petrochemicals sector due to replacement of Metals, Wood, and Glass etc. Compared to refining, the**

petrochemical industry has better profitability prospects. The annual global demand is expected to grow twice as fast as petroleum demand. Therefore, refinery based petrochemicals can play a significant role in providing secured supply to petrochemical processors.

In addition, a synergy can result by the integration of refining and petrochemical complexes resulting in following benefits:

- Lower transportation costs due to elimination of inter-facility transfer and by-product improvement.
- Lower infrastructure cost due to sharing of facilities.

Outlook

The refinery capacity is expected to reach 129 million Tonnes in a couple of years while the consumption is estimated to be only around 110 million Tonnes. In such a situation of excess capacity, the refineries will have to rework their plans and look out for new markets for their product. With decreasing refining margins, the refineries would have to go in for integration with basic petrochemicals like benzene, toluene, Xylene, Cumene, Cyclohexane, Olefins, etc. At the same time, refineries will have to become energy companies and produce merchant power. With the knowledge of managing best of its kind, boilers in the country, refineries have a distinct advantage over other power companies, which should be put to effective use.

The future of refineries seems to be bleak if they continue to operate as fuel refineries only.

f. Bulk Drugs and Pharmaceuticals

Domestic Scenario

Over 20,000 registered pharmaceutical manufacturers exist in the country. The market share of MNCs has fallen from 75% in 1971 to around 35% in the Indian pharmaceuticals market, while the share of Indian companies has increased from 20% in 1971 to nearly 65%. PSUs have almost lost out completely.

The sector has undergone several policy as well as attitudinal changes over the past two years. It was one of the major beneficiaries from the budget proposals. Some of the positive steps taken were:

- Pharmaceutical industry is recognized as knowledge based industry. The government has plans to increase the investment in research and development.
- Rationalization of excise duty and reduction in interest rates in export financing.
- Additional deductions under Income Tax laws for R&D expenses.
- Foreign direct investments permit upto 74% through automatic route.
- Setting up two high level committees to review the drug policy for strengthening R&D capabilities and reducing the price control regime. Besides, the Indian Parliament has enacted the required changes in the Indian Patent Act 1970 (IPR) regarding mailbox arrangement and exclusive marketing rights (EMR).

Emerging Trends:

- Increased focus on R&D: Major domestic players namely Ranbaxy, Dr Reddy's Labs, Cipla, Nicholas Piramal and Wockhardt are aggressively investing in R&D.

Dr Reddy's Labs and Ranbaxy have already discovered one new chemical entity (NCE) and are in Phase II and Phase I of the clinical trail respectively.

- Marketing tie-ups: Domestic players and MNCs have entered into marketing arrangements to increase market penetration and further strengthen positions in respective therapeutic segments.
- Product rationalization/ brand acquisition/ company acquisition: Most of the top pharmaceutical companies are consolidating their position in the domestic market either through product rationalization, brand acquisition or company acquisition. Hoechst, Glaxo, Wockhardt and Ranbaxy have cut down their product portfolio in order to be more focussed.

Exports of drugs and pharmaceuticals, in particular, have shown impressive growth of 7.85% and 2.97% in the last two years– the only sector of the chemical industry (other than cosmetics and toiletries) to show positive growth for both the years.

g. Organic Chemicals

The organic chemical industry that covers a wide range of chemicals is a Billion-Dollar industry. Most of the units of organic chemicals are concentrated in Western India.

Production of Major Chemicals

Table 2- 3 Production of Major Chemicals (Private)

Chemicals	Installed Capacity ('000 Tonnes)	Production: 98-99 ('000 MT)
Methanol	386.0	380.0
Formaldehyde	255.0	161.4
Acetic acid	203.6	190.0
Phenol	66.6	62.6
Acetone	63.6	5.0
Acetic anhydride	56.2	40.5
Nitrobenzene	52.0	42.8
Chloromethane	32.1	33.2
Aniline	28.1	23.5
Maleic anhydride	24.4	12.7
Pentaerithitol	15.2	13.9
PNCB	11.2	11.0
MEK	7.0	5.0
Citric acid	6.3	5.3
ONCB	5.3	5.3
Isobutyl alcohol	2.0	1.3

Outlook

The outlook for the overall organic chemical industry is not very positive. The production of most of the chemicals has been much less than the installed capacities. Only some of the specialized organic chemicals may have a bright future in terms of expectation of new investments.

h. Inorganic Chemicals

The inorganic chemicals are a US$ 2.5 Billion industry. It covers basic products like Caustic, Chlorine, and Sulphuric Acid etc. Inorganic chemicals are mostly used in detergents, glass, soaps, fertilizers, alkalis etc.

The average growth rate in this sector has been 9% per annum during the last decade whereas the industry average was just 6%. Though inorganic chemicals had a high growth rate previously; yet in the current scenario, a stiff competition from imports has had a significant impact on the growth of domestic industry

Table 2- 4 Production of Major Inorganic Chemicals '000 MT

Products	Installed Capacity	95 - 96	96 -97	97 -98	98 -99	99 -2000*
Soda ash	1865	1552.1	1540	1545.8	1560	1560
Caustic Soda	1964.5	1243.1	1250	1309.2	1320	1350
Liquid Chlorine	1031.1	709	715	702.9	715	740
Carbon Black	286.2	223.6	250.8	208.3	230	240

Table 2- 5 Production of Other Chemicals

Products	Installed Capacity	95 -96	96 -97	97 -98	98 -99	99 - 2000*
Calcium carbide	150	95.3	96	78.3	72	80
Titanium dioxide	47	29.4	25	26.2	27	27
Aluminium fluoride	30.1	17	17	14.3	15.4	17.5
Potassium chloride	13.3	4.1	3.5	4	5	5.5
Sodium chlorate	4.1	1.5	1	0.5	0.5	1
Red phosphorous	1.7	0.9	0.9	1	0.9	1

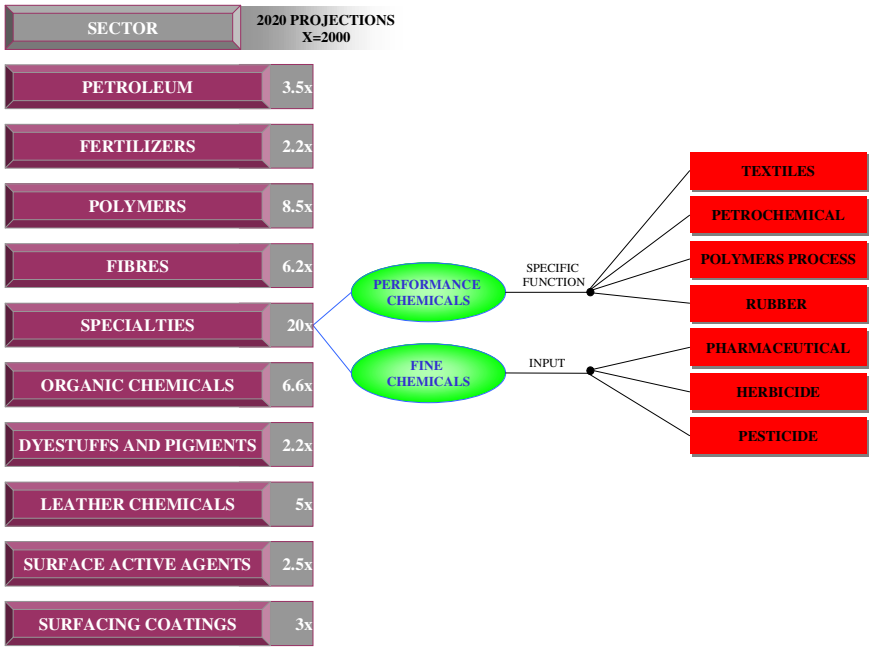
* Anticipated

Outlook

A study of the comparison of the installed capacities and demand depicts that most of inorganic chemicals have over-capacity today. These figures therefore don't justify any significant expansion in the sector.

2.4 FUTURE PROJECTIONS OF MAJOR CHEMICAL SECTORS

The segments in the chemical industry that indicate a positive growth rate are polymers, specialities, and organic chemicals. Some of the speciality chemicals are Textiles processing, petrochemical, polymer processing, rubber and pharmaceuticals. These projections are as per TIFAC report.



Projections for 20001 are as per TIFAC 2020 report on Chemical Industry

The figure above indicates the market size in the year 2020 as compared to the year 2000. The figures are direct proportions of the market that is forecasted to exist in the year 2020. The table underneath comprises the major chemical segments, their capacity and the growth potential by the year 2020.

Table 2- 6 Major Chemical Segments and Growth Potential

	Million 1995	Tonnes 2020
Petroleum Products	70	240-250
Fertilizers	9	>20
Polymers	1.7	<15
Fibres	0.8	<5
Organic Chemicals	3	20
Dyestuffs & Pigments	0.1	0.21
Leather Chemicals	0.1	0.5-1.0
Surface active agents	0.3	0.7
Surfacing Coatings	0.5	1.5
Speciality Chemicals	0.1	2.0

Projections as per TIFAC 2020 report on Chemical Industry

2.5 EXPORT PERFORMANCE OF CHEMICAL & ALLIED INDUSTRIES

The figures of exports of a particular segment or a product can give a fairly good idea of the growth potential of that very product category. The figures indicate that there has been a growth of 7-8 % in the Indian chemical exports fetching revenues worth Rs. 12,387 Crores in the FY 1999-2000. Although the chemical exports form a meagre 7% of the overall Indian exports, yet this share can be increased owing to the fact that the global demands are escalating. The basic requisites would be a quality assurance in the products exported and aggressive pricing. The following table gives a comparative statement of the export-related figures of Indian chemical industry for the last four financial years.

Table 2- 7 Comparative Analysis of Export of Indian Chemical Sectors (Rs. Crores)

	1996-97		1997-98		1998-99		1999-00	
Sector	$ MN	Rs. Cr.	$ Mn	Rs. Cr.	$ Mn	Rs. Cr.	$ Mn	Rs. Cr.
Drugs & Pharmaceuticals	1,168	4,090	1,370	4,978	1,486.7	5,947	1,532.2	6,435
Dyes & Dyes Intermediates	556	1,945	615	2,228	468.7	1,875	581.1	2,441
Inorganic, Organic & Agrochemical	595	2,082	604	2,195	530.8	2,123	653.7	2,746
Cosmetics & Toiletries	144	503	138	502	167.8	671	182.2	765
Total	2,463	8,620	2,727	9,903	2,654.0	10,616	2,949.2	12,387
All exports		118,817		126,286		132,842		157.920
Share of chemical exports		7.3%		7.8%		8.0%		7.8%

** Source: CHEMEXCIL*

Table 2- 8 Growth in Exports of Chemicals & Related Products (Rs. Crores; US$ million)

	In Dollar terms		In Rupee terms	
	98-99/97-98	99-00/98-99	98-99/97-98	99-00/98-99
Drugs & Pharmaceuticals	7.85%	2.97%	16%	7.58%
Dyes & Dyes Intermediates	-31.21%	19.34%	-19%	23.19%
Inorganic, Organic & Agrochemicals	-13.79%	-18.80%	-3%	22.69%
Cosmetics & Toiletries	17.76%	7.90%	25%	12.29%
Total	-2.75%	10.01%	7%	14.30%

Exports of these products declined by 2.75% in dollar terms in 1998-99, but rebounded to post an impressive 10% growth in 1999-00. In rupee terms, exports grew by 6.7% in 1998-99 and by 14% in the following year.

Exports of drugs and pharmaceuticals, in particular, has shown an impressive growth of 7.85% and 2.97% in the last two years which is the only sector of the chemical industry (other than cosmetics and toiletries) to indicate a positive growth for both the years.

While exports of dyes and intermediates indicated a decline of 31% (in dollar terms) in 1998-99, it recovered marginally to show a 19% growth in the following year. Exports of inorganic, organic and agro-chemicals showed a decline of 14% in 1998-99, but recovered to a 19% growth in the ensuing year.

2.6 IMPORT OF CHEMICALS AND ALLIED PRODUCTS

The figures related to imports again are of great significance when one has to figure out the demand estimation of the chemical sectors that can be targeted for investing in Kutch. Knowing the fact that the proximity of the chemical estate in Kutch to ports would facilitate the import of raw materials, a study of the sectors that predominantly utilise imported raw materials for their production becomes vital. The following table gives an insight into the major chemical segments.

Table 2- 9 Imports in Major Chemical Segments (Rs. Crores)

Sector	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00
Organic chemicals	2,783	4,339	5,698	6,223	6,667	5,620	6,620
Inorganic chemicals	1,529	2,371	2,883	3,223	4,452	5,112	5,486
Synthetic resins	1,363	1,903	2,687	2,826	2,565	2,702	2,970
Bulk drugs & pharmaceuticals	809	937	1,358	1,089	1,301	1,535	1,457
Dyes & other colouring materials	287	439	509	600	659	741	800
Synthetic fibres	126	444	502	423	459	276	178
Synthetic & reclaimed rubber	287	344	441	529	469	495	503
Essential oils & Cosmetic preparations	40	64	76	80	100	155	200
Total of above	7,224	10,841	14,154	14,993	16,672	18,535	20,213
Growth rate		50%	31%	6%	11%	10%	9%
Total of all imports	73,101	89,971	122,678	138,920	151,554	169,513	194,142
% of chemical imports to total imports	9.9%	12.0%	11.5%	10.7%	11.0%	10.9%	10.4%
Total chemical exports	4,510	5,352	8,338	8,620	9,903	10,616	12,387
Trade balance in chemicals & allied products	2,714	5,188	5,816	5,495	6,769	7,919	7,826
Other major imports							
Petroleum & crude oil	18045	18613	25174	35629	30,538	25,588	44,077
Fertilizers	1983	2399	4621	2434	3,065	3,245	4,535
Coal, coke & briquettes	1463	2224	3096	3532	4,348	3,917	4,166

Table 2- 10 Growth in Imports of Chemicals & Related Products (Private)

Sector	Growth	
	98-99/97-98	99-00/98-99
Organic chemicals	-18.63%	15.11%
Inorganic chemicals	12.91%	6.82%
Synthetic resins	5.07%	9.02%
Bulk drugs & pharmaceuticals	15.24%	-5.35%
Dyes & other colouring materials	11.07%	7.38%
Synthetic fibres	-66.30%	-55.06%
Synthetic & reclaimed rubber	5.25%	1.59%
Essential oils & Cosmetic preparations	35.48%	22.50%

Total of above	10.05%	8.30%
Total of all imports	10.59%	12.69%
Petroleum & crude oil	-19.35%	41.95%
Fertilizers	5.55%	28.45%
Coal, coke & briquettes	-11.00%	5.98%

The imports in most of the sectors have maintained a steady rate of growth. The sectors with high rate of growth in imports have been petroleum, essential oils & cosmetic preparations, fertilizers and organic chemicals.

2.7 CONTRIBUTION OF CHEMICAL INDUSTRY TOWARDS EXCISE

The following table depicts how various sectors of the chemical industry contribute to the excise duty as per the excise rules and regulation.

Table 2- 11 Contribution of Sectors to Excise Duty *All figures in Rs. Crores*

Sector	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Chapter 28									
Acids inorganic	58	73	61	103	109	115	115	115	110
Alkalis	117	118	186	269	271	160	164	164	151
Soda ash	124	130	182	214	220	212	218	218	213
Others chemicals in Chap. 28	349	367	570	623	658	644	668	667	643
Organic chemicals	714	652	1,010	1,134	1,050	1,109	1,291	1,791	2,162
Chapter 30									
Pharmaceuticals	527	550	659	720	883	855	971	972	1,303
Chapter 31									
Fertilizers	13	13	25	30	35	36	43	43	43
Chapter 32									
Dyes, pigments	91	88	62	62	81	91	115	115	102
Paints, varnishes	294	288	283	218	239	246	282	282	263
Others products in Chap. 32	22	23	34	33	44	43	47	47	44
Chapter 33									
Perfumery compounds,	294	264	314	280	350	411	569	569	624
Chapter 34									
Soaps	216	254	311	336	414	359	449	449	451
Surfactants	255	285	207	254	237	175	222	222	208
Other products in Chap. 34	28	39	37	37	51	45	53	53	62
Chapter 35									
Starches, glues, enzymes	36	55	45	45	56	60	70	70	66
Miscellaneous chemical products	228	260	407	445	503	462	454	454	446
Chapter 39									
Plastics & articles	1,221	1,417	1,405	1,397	1,443	1,776	2,095	2,595	3,198
Chapter 40									
Rubber & articles	1,037	1,280	1,305	1,287	1,427	1,167	1,192	1192	2389
Total of above	5,624 (21.0)	6,156 (20.8)	7,103 (22.0)	7,487 (21.2)	8,071 (19.8)	7,966 (17.9)	9,018 (18.4)	10,018 (17.7)	12,478 (19.6)

Source: Centre for Monitoring Indian Economy

Note: Figures in brackets denote percentage of gross basic excise duty collected; figures for 2000-01 are based on budget estimates

The total excise collection of the chemical industry holds a very high share in the excise duty collected by the Government. The amount of excise duty paid has significantly risen in pharmaceuticals, plastics, rubber, and organic chemicals. This shows the high growth in production in these sectors.

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