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MATERIALS MANAGEMENT REVIEW



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SPECIAL ISSUE ON CHEMICAL INDUSTRY

Interview with Bimal Goculdas, PRESIDENT - INDIAN CHEMICAL COUNCIL (ICC) & MANAGING DIRECTOR and CEO of DMCC SPECIALITY CHEMICALS LTD.

Interview with S.Kartik, VICE PRESIDENT - TAGROS CHEMICALS INDIA PVT. LTD.

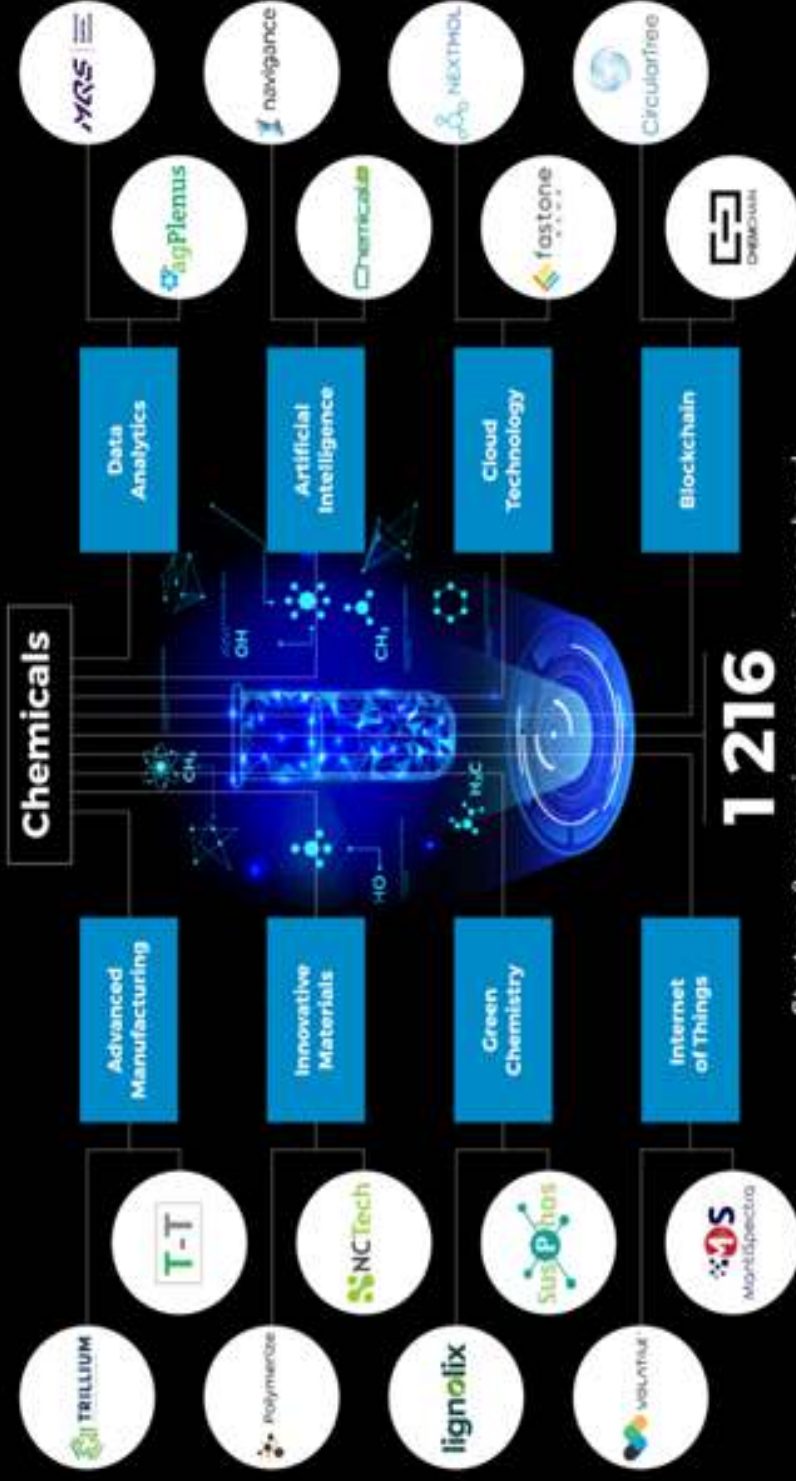
Interview with Mr Ravi Goenka, IMMEDIATE PAST PRESIDENT, ICC & CHAIRMAN and MANAGING DIRECTOR, LAXMI ORGANICS INDUSTRIES LTD.

THE FUTURE OF SUPPLY CHAIN MANAGEMENT IN THE CHEMICAL INDUSTRY



LATEST TRENDS IN CHEMICAL INDUSTRY

Top 8 Chemicals Trends & Innovations in 2023



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Startups & emerging companies analyzed

Data provided by • **StartUs** insights • January 2023

From the Desk of Chief Editor & National President



Chemical Industry has evolved significantly over the past few decades and almost caters the need of every other industry. More than 96% of the products manufactured use chemicals in one or other way, thereby making chemical industry as one of the largest economic sector of economy. Chemical industry is highly diversified with numerous product lines like petrochemicals, agrochemical and fertilisers, commodity chemicals (rubber, plastics, detergent, cleaning chemicals, adhesives, solvents etc.), pharma chemicals, speciality chemicals (paints, coatings, colours, food chemicals, food additives, fragrance etc.). It is estimated that the revenue generated by chemical industry globally is more than USD 4 trillion.

Chemical supply chain has its own set of challenges besides other challenges faced by any other industry. For instance, chemical manufacturer needs supportive and protective gears for its labour to prevent them of allergic/physical reactions due to gases/fumes evolved as a result of chemical reaction. Likewise, there is need of special containers (ISO Specified) to store chemicals which are highly reactive in nature. Further to it, quality of chemicals produced is highly dependent on an accurate understanding of chemical properties of raw material and how it will behave when used in external environment.

Inventory Management and data related to Chemical manufacturing are highly complex as it involves batch productions, or various kinds of chemical processes can merge and end up as either intermediate or finished goods which further add to complexity of chemical supply chain in forecasting or planning the requirement of various chemicals in near future. Moreover, Chemical supply chain is highly regulated as per Government laws and regulations. Failure to comply with these laws and regulations will result in hefty fines besides causing health issues to public.

For chemical companies to remain competitive, efficient and profitable, it is essential to adopt newer & innovative technologies. It is obvious to be agile and resilient for any supply chain to be effective, but in order to react quickly, it is pertinent to have complete digital visibility and intelligent supply chain system to identify blind spots, improve operational productivity across all regions, meet consumer demand and increase profitability.

Despite all the challenges, chemical businesses are improving their supply chain capabilities to handle complexity and meet client demands. Modern solutions such as AI and digital visibility platform can optimize production processes, give proper insight on inventory status, increase efficiency, reduce risks for potential environmental violations or penalties, identify opportunities to use recycled chemicals as raw materials when possible, and more.

IIMM has opened a new branch in one of the chemical hubs of the country at Ankaleshwar. This will help improve the industries in and around Ankaleshwar in the areas of Supply chain management. I am sure a branch at Ankaleshwar will soon become a prominent branch in the region.

I wish Ankaleshwar branch a great future ahead.

A handwritten signature in black ink, appearing to read 'H. K. Sharma', with a horizontal line underneath.

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FUTURE OF CHEMICAL INDUSTRIES IN INDIA

BIMAL GOCULDAS, PRESIDENT - INDIAN CHEMICAL COUNCIL (ICC) & MANAGING DIRECTOR & CEO OF DMCC SPECIALITY CHEMICALS LTD.

Mr Bimal Goculdas is the current President of Indian Chemical Council (ICC). Mr Goculdas is the Managing Director & CEO of DMCC SPECIALITY CHEMICALS LTD. He is a technocrat, who is associated with DMCC for over past two decades. He has played a pivotal role in transforming the organisation and propelling business growth.

He is also a Chemical engineer and prior to joining DMCC Specialty Chemicals Ltd, he has worked with various companies and has an expertise on various job roles. In an interview with **CHEMICAL NEWS**, he shares about his insights on Indian Chemical industry, digitalisation, promotion of circular economy and sustainable development and so on.

1) Where do you see the Indian chemical industry by the end of this decade? What sectors are likely to grow most?

I expect the Indian Chemical industry to grow substantially. Our road to growth will surely exceed the GDP growth of the country. I also expect, that amongst all the large chemical manufacturing countries in the world, India's growth will be amongst the best.

There are many factors which can accelerate or decelerate growth. The government of India is giving a good push to the economy in general, through many incentive schemes. We have worked on a detailed paper along with Avalon Consulting, identifying the many products that should be targeted for replacement of imports by domestic production. While making this paper, many factors were considered including dependence of one country for imports, availability of technology, raw materials and market size, absolute value of imports as well as rate of growth of imports. If PLI is introduced for these products, it will encourage investments and growth. The incentive that we are asking for only come into play if production is achieved, which means that the country will save foreign exchange, will become Atmanirbhar, and therefore it cannot be considered as a subsidy.

According to me, the intermediate sector is likely to grow the most. There are several reasons for this. Firstly, most intermediates are in the small to medium volume segment. India does lag behind in infrastructure such as pipeline transport, bulk storage at the ports, availability and cost of energy and fuels, as well as roads and airports. While these issues are being addressed, upgrading infrastructure would take a long time. Intermediate sector, unlike the large volume chemicals, is able to absorb to some extent the extra cost of inefficiency in these areas.

Secondly, most of the intermediates have some sort of innovation in the process technology. Indian chemists and chemical engineers both in industry and academia, are quite clever with innovation and designing efficient processes. This skill is well suited to manufacturing of intermediates. The other reason is that the bulk segment will not grow as fast, with the signing of free trade agreements with

countries that have existing production of large volume chemicals and/or availability of low cost energy and feedstock, it will be difficult for India to compete. The financial cost in India is also much higher than in China, Japan, USA and EU, making the large investments in bulk chemicals which makes it much more difficult.

2) Chemical industry has been a laggard when it comes to digitalisation, as compared to other sectors of the economy. What can be done to correct this lacuna?

Digitalisation is a very broad term. It can be applied in many ways to chemical plants. In each product and in each chemical plant the decision would have to be taken on an individual basis about the level of digitalisation, the type of digitalisation, as well as the need for it in the first place. If you can go back historically, most chemical plants were operator managed. The entire operation was manual which had many disadvantages including inconsistent operation and safety issues. As electronics improved, and hardware and software became more affordable, and labour more expensive, the chemical industry adapted by first putting single loop controllers and then PLC and DCS. This is also a form of digitalisation. It is safe to say that most medium and large chemical companies are working with such systems. Operator involvement is minimum and processes are controlled by the logic which is built into the system.

The next level of digitalisation involves a lot more in terms of hardware and software, and overall sophistication. You can have many AI based decisions making tools or even things such as steam trap performance and continuous monitoring of rotating equipment. We have seen many presentations involved in supplying such technology. In my opinion, digitisation will not happen just for the sake of going digital. In the Indian context, we are generally conscious about costs and pay - payback. Unless, there is a good return of investment, typically 5 years or less, this technology is unlikely to be absorbed on a large scale. We have to consider many other factors as well. For example, you need to consider minimum number of operators for safety reasons in the plant in any case. By adding digitalisation, we may not be able to reduce people further, hence, unless there is a positive impact of digitisation on the bottom line by means of process efficiency improvement, safety improvement etc., and the return on investment may be too low. However, as mentioned earlier each individual process will need to take its own decision based on relevant conditions.

My recommendation would be for companies involved in digitalisation to develop case studies and build up a database of solutions with pay back calculation under Indian conditions. It is only then that the implementation and digitalisation will increase. One of the other factors to consider under Indian conditions is the ambient air quality, humidity, and concentrated rainfall in the monsoon, quality of reliability of power supply, and availability of sophisticated man power to operate such systems.

3) What can the chemical industry do to promote a

circular economy and sustainable development?

In my opinion the Indian Chemical Industry is already doing a significant amount of '3 R's- REDUCING, REUSING AND RECYCLING. There are many examples of byproducts being converted into value added saleable products. In case of our own company, we became global leaders for one particular intermediate. The byproduct from this was initially considered waste and sent to landfill. However, through the intensive R&D and market development that byproduct has been upgraded and is now being supplied to the paper and polymer industries globally and in fact commands a price premium over the main product. This is not an isolated example.

All industries need to look at their entire process chain, right from the raw materials, intermediate products (and byproducts) as well as the end product. Some questions that can be asked to R&D teams:

- o Can a raw material be tweaked to reduce waste?
- o Can the process be intensified to improve temperature control and reaction efficiency and therefore produce less by product?
- o If byproduct is unavoidable can it be refined and sold as a separate product?
- o Can byproduct be used as a raw material for some other process?
- o Can we take byproducts from other industries instead of starting with pure products?

Innovation would be the key and we need to use all resources at our disposal, not only our internal development teams but also institutions with whom we can partner. To really improve in this approach, we need full support from the Government including The Ministry of Environment and Forest (MOEF), Central Pollution Control Board (CPCB), and state Pollution Control Boards (PCBs), the laws need to encourage reusing and recycling. Today, we have thousands of tons of byproduct acids for example which can be used as raw materials in fertilizer and chemical plants. The speed of approvals for these recycling protocols needs to increase. If byproducts reuse is not permitted, then it would result in a huge extra cost for treatment of the byproduct as well as a huge cost to send it to a land fill. This will surely make the industry non-competitive and build mountains of waste instead of encouraging a circular economy.

For sustainability, the chemical industry needs a carrot and stick approach. Good performing companies need to be rewarded, whereas those flouting norms need to be punished. ICC has 2 flagship programmes for sustainable development "Responsible Care" and Nicer Globe". Following the principles of these internationally accepted programmes would go a long way in improving sustainability. The Responsible Care" approach changes the mindset within an organization and in fact would ultimately result in increasing efficiency and reduce costs. I would encourage the entire chemical industry to participate in these programmes and give their preference to suppliers who are authorised to use the RC logo. NG adds to transportation safety and efficiency, and would go a long way in improving overall supply chain safety and economics.

4) There is a general feeling that the chemical industry has not been attracting the best talent. What can be done to address this issue?

It is a fact that the chemical industry and the manufacturing industry in general are not attracting the best talent. There are various reasons for this. One of the main issues is of course the working location and conditions. Engineers are expected to be at the factory and factories are normally in remote locations. However, if an engineer takes up a job in finance or marketing he can be based in the city or work in a much comfortable office. An Engineering education trains students in mathematics and this is useful in a wide range of fields. The other avenues for loosing talent is the brain drain to the west. It is a global phenomenon that chemists and chemical engineers are in short supply. By attracting the best students with scholarships and research fellowships, Universities in the EU and USA are attracting the best talent. After completing their degrees these students form a very attractive pool from which chemical companies overseas can source talent.

There is no easy solution to this. Of course we have to aggressively market the importance of chemical industry and the impact that it has on mankind overall. We also need to address the issue of working conditions in the plants. Referring to your earlier question on digitalisation, this is one area which could help in talent attraction and retention. By using AI and advance software, it may be possible for engineers to be remotely located and yet perform their functions. The other important condition for attracting talent is of course salary. The chemical industry will have to compete with finance and other service sectors to attract the best. It is in fact the chicken and egg situation, where unless you attract good people you won't get good output and then you would not have the resources to attract good people. Particularly in India, the growth in the service sector is so high that it can outbid the chemical industry for the best talent. What I think we need to do is to better define a career path for the long term which would show growth in responsibility, growth in impact on business and thereby growth in the overall industry. With the Chemical industry performing well overall, stock options can be considered to attract and retain talent.

5) What are some of your priorities for ICC?

The beauty of the existing structure of Indian Chemical Council is that the leadership is involved for an extended period of time. It is only after 2 years as Additional Vice President and 2 years as Vice President does one get to be the President. Therefore, the President is involved in policy making, projects, and long term vision of ICC long before he takes the lead role. Therefore, priorities are set in conjunction with all stakeholders including the Government, the industry, and the past and future Presidents.

The priorities currently for ICC are the following:

- Ø Sustainable growth of the industry including RC and NG programs
- Ø Interaction with the Government departments to attain Atmanirbhar status.
- Ø Improve collaboration between academics/research institutions and industry.
- Ø Enhance the image of ICC domestically and globally
- Ø Improving safety at the MSME level in addition to large companies

Apart from the above, I would like to see an increase in the membership, increase in regional activities especially in the East, and engaging with State Governments to encourage not only industrial growth, but also to ensure availability of skilled manpower at all levels.





ENERGY SECURITY AND ZERO EMISSIONS TARGET IN INDIA – ARE THEY CONTRADICTORY GOAL AT PRESENT?

N S VENKATARAMAN
FOUNDER AND DIRECTOR, NANDINI CONSULTANCY CENTRE

India presently imports around 80 percent of its crude oil requirement and around 50 percent of its natural gas requirements. As the domestic production of crude oil and natural gas are virtually stagnant and the domestic demand is increasing at around 7 percent per annum, India's steadily increasing dependence on import of the vital energy source is a matter of high energy security concern. This is particularly so, since the price of crude oil and natural gas are considerably fluctuating/increasing in the global market due to geo political factors, which are beyond the control of India. India has promised to achieve zero emission by the year 2070, which mean that the level of emission has to start declining at slow and steady rate from now onwards.

It is now well recognized that global emission is caused largely due to use of coal as fuel and natural gas as fuel and feedstock. While burning of coal as fuel cause emission of global warming carbon dioxide gas and sulphur dioxide gas, the storage and transportation of natural gas cause methane emission. India has to simultaneously tackle energy security issue and also has to reduce the emission level at the same time. Is this possible in the present circumstances? Are the strategies being adopted to tackle these two issues contradictory?

Limitation of the Strategies : The strategies for India to reduce emission and import dependence on crude oil consist of blending

ethanol with petrol, promotion of electric vehicles, increase in renewable energy generation as well as promotion of hydrogen as fuel and feedstock.

In the case of renewable energy, a total of 144 GW capacity excluding hydro power has been installed as of June 2022. Besides, renewable energy projects of 60.66 GW capacity are under various stage of implementation and 23.14 GW capacity are under bidding. While the progress is laudable, the fact is that the impact of renewable energy project in reducing crude oil import dependence would not be significant, since renewable energy generation is seasonal and climate dependent and the capacity utilization of renewable energy project is only at around 20 percent.

In the case of electric vehicle, Government of India aims at ensuring that 30 percent of all new vehicles are electric by 2030. While good progress is being made and electric vehicles can reduce emission, it should not be nullified by using electric power for charging batteries if the power were to be generated by burning coal, which is a fossil fuel generating emission. There is no way that the power requirement of electric vehicle would be completely provided by renewable energy in the foreseeable future.

Government of India has fixed 20 percent target to blend ethanol with petrol by 2025 and good progress are being made to

boost ethanol production. However, this would make short supply of ethanol for other industrial purposes, as ethanol is an important feedstock for chemical industry. Further, it is estimated that 20 percent ethanol blending with petrol would result in 70 million tons of greenhouse gas emission, due to physical transportation of 1,016 crore litre of ethanol per year by trucks using petroleum fuel.

In the case of hydrogen energy, renewable hydrogen industry is still in development stage across the world. Impressive progress is being made in utilising hydrogen abroad like hydrogen fuel-based railway project costing ¹ 737 crore implemented in Germany. However, as of now, such hydrogen used is not green hydrogen. In India too, hydrogen fuel cell vehicle plants have been announced including one at Chennai. However, these projects would use blue hydrogen or grey hydrogen and not green hydrogen produced using renewable energy. Obviously, the above strategies which are progressive, would be totally insufficient to reduce India's import dependence of crude oil and natural gas to any significant level in the foreseeable future.

Dependence on Coal : While government of India is implementing the above strategies, it is also increasing the production of coal, which is a fossil fuel. To increase the production of coal to around 1000 million ton per annum from the present level of 700 million ton per annum, the government of India has now auctioned 10 coal mines for commercial exploitation. Obviously, boosting coal production and greater use of coal as fuel to reduce import dependence on crude oil, will cause emissions and obviously, this would nullify the emission reduction strategies of Government of India. This appears to be a contradictory policy.

Need for New Strategies : In the recent

months, when global crude oil price has steeply increased, government of India somehow managed the situation by buying crude oil from Russia at discounted price. However, this strategy can essentially be a short-term measure. In such circumstances, apart from the strategies adopted already, India has to think about more imaginative solutions which could be the following.

Promotion of algae crop and algae biofuel for which the requirements such as tropical conditions, availability of waste land, requirement of sunshine and carbon dioxide, etc. in India provide an ideal situation for promoting algae crop/biofuel.

India imports around 2.2 million ton of methanol per annum, as India does not have competitively priced natural gas which is the feedstock for methanol production. Commercial plants are operating abroad for production of methanol from municipal solid waste. India should have no hesitation in exploiting this methanol investment opportunity from municipal solid waste.

From methanol, dimethyl ether can be produced, which is an eco-friendly fuel that can replace petroleum-based LPG in a big way. Further, it is necessary to boost domestic production of ethanol to meet increasing percentage of ethanol blending with petrol. For this, ethanol production from beet sugar should also be promoted in India in a big way as ethanol from beet sugar has even more advantages than ethanol from sugarcane as it is less water consuming.

Source: chemindigest.com



FUTURE AND GROWTH OF CHEMICAL INDUSTRY

AJJAY KUMAR GUPTA

NIIR PROJECT CONSULTANCY SERVICES (NPCS)

India is embarking on a high growth path, and the country is establishing itself as an attractive destination for investment in chemical industry. Organic chemicals are witnessing high growth due to growing demand from consumer goods & pharmaceutical industry.

The Chemical industry dominates the Indian economy accounting for 6% of the total industrial output in 2009. India's chemical industry is currently regulating towards modernization of the chemical plants and adopting western technologies while simultaneously increasing their productivity. The main factors for its growth could be listed as follows:

Fundamental Edge- the Indian paint industry is the fourth largest in terms of volume and the third largest in terms of value marketed at Rs. 16,500 Crore in FY 2013-14. The paint industry has exhibited a positive growth on account of the growing construction activity, rising disposable income levels, rural demand and adoption of modern building material like polymer modified cement sheet, plastics and ceramic tiles.

With a growing market and purchasing power and with India's growing population, the domestic industry is likely to grow at over 10-13 percent in the coming years. Growing disposable incomes and increasing urbanization are fuelling the end consumption demand for paints, textiles, adhesives and construction, which, in turn, leads to substantial growth opportunity for chemicals companies.

Government Policies- India's chemical industry has always been protected by high tariffs, strict foreign direct investment (FDI) policies and other regulatory controls. The government of India has maintained a mixed, uncertain and cautious view on FDI in the chemical industry. Increasing growth in end-user demand is expected to boost the domestic market for chemical products in India in the coming years.

Also, around the globe the chemical industry is a major contributor to the U.S. economy. It has been growing steadily since 1949 and now accounts for over one trillion dollars in goods and occupational output.

The steady growth of the U.S. chemical industry rests on the foundation of government policies that have encouraged large investments in basic research, development, and innovation as well as increasing public and private sector collaboration.

There has been an array of governmental policies that have contributed to this industry's success ranging from

basic research, infrastructure support programs (particularly those supporting scientific education), infrastructure assistance like tax credits and investment tax credits, intellectual property protections (mainly through the patent office, but also via WTO agreements), modern measurements of science and technology commercialization, deregulation of chemical production, public-private sector partnerships between government agencies (particularly NIH) and companies for transferring scientific findings into innovative commercial processes., trade protectionism , defence contracts related to new technologies.

Rise in Demand- India was the seventh largest producer of chemicals in the world in 2012 and one of the top producers of chemicals in Asia. The Indian chemical industry consumes around 33% of its own production, mostly due to extensive usage in the domestic textiles industry. This presents a great opportunity for you as an investor – hence, we have dedicated special attention to the chemical sector in India.

India is the largest consumer of its own products. This fact underlines the sector's importance to the overall economic health of the country as well as its deep integration into local industries. The Indian chemical industry, which is dominated by large companies, especially consumes basic petrochemicals output for its own use (33% of total output in 2015).

However, this might deepen over time as India's regulations are becoming more demanding and are increasingly encouraging industries to move up the value chain.

Bulk of Producers- From bulk chemicals to specialty compounds, from agrochemicals to fine chemicals, from healthcare products to materials and polymers, the Indian chemicals industry has a diversified manufacturing base that produces world-class products.

The country has even declared itself as a major knowledge hub for a host of chemical-intensive industries. And its largest pool of scientific manpower is ready and willing to help you create value in the fastest growing sectors of the global economy – pharmaceuticals and agrochemicals.

India's chemicals industry segment is a fast-growing sector of the economy characterized by its large diversity in terms of the products and applications. The Indian chemicals industry has a diversified manufacturing base, high-value added downstream industries such as petrochemicals, Fertilizer, and

agrochemicals, as well as world class products produced locally or through global operations spread across the world. This large and expanding domestic market is also characterized by a very large pool of scientific manpower trained to cater to this fast-growing sub-sector.

Increased Exporters- India ranks third among major dyes exporting countries. At present India exports over 355 different types of dyes to over 22 countries all over the world through. DEPCO's range of dyes is one of the most comprehensive in India and is growing as a result of our ongoing investment in product and process innovation. Our products are available in various forms – bulk products, powder, crystalline and aqueous (liquid) solutions. They offer a large variety of dyes, which have applications in many industries.

It is also largest exporter of dyes and pigments in Asia, accounting for ~3.5% of the global exports. The Indian pharmaceutical industry has grown to reach a turnover of Rs.282 billion and provided employment to around 1 million people in 1998-99.

Additional Formats- Being one of the fastest growing economies in the world, India offers a wide range of business opportunities for chemical industries. The key driver for chemical demand is growth in infrastructure and social sectors like health, education and transportation. In addition, with the growth in living standards and per capita income, there has been a rise in consumption of personal care and home care products.

The Indian chemical industry is poised for rapid growth with the government's initiatives to encourage bio – based chemical inputs, eliminate tariff and non – tariff barriers, strengthen regional integration of chemical sector, promote domestic and export-oriented investments, incentivise innovation and technology development and R&D activities.

Reliance Industries Limited, focus on four key areas of diversification - Chemicals, Energy, Retail and Digital. Initiatives have been taken to ensure that their products and services are available when you need them. They believe this sentiment allows our customers to focus on their work while we provide a seamless experience.

At the helm of India's chemical and petrochemical industry, the Steel Ministry is set to bring in numerous reforms. These include setting up oil refineries in collaboration with international oil majors, multiband retail for consumer goods and reforms to help launch innovative products across consumer and industrial categories. The Ministry is also focused on increasing value addition in the industry to drive growth in the domestic chemicals and fertilisers sectors, besides providing impetus to the Prime Minister's Make in India initiative.

Investment Criteria- TPCL has offered to develop a technology up-gradation fund of USD 80 million in the

12th Plan period and to support this effort with 50 matching grants. The four projects approved for implementation are: work on upstream reaction technologies, value chain upgrading via major low-impact technologies, work on downstream separation and purification systems, business opportunities in chemical synthesis and processing, specifically aimed at independent entrepreneurs.

Effects from Industrial Sectors : The Indian chemical industry is the second largest in Asia and the twelfth largest in the world. It encompasses a range of products, both basic and sophisticated, including petrochemicals, pharmaceuticals, agricultural chemicals, dyestuffs and speciality chemicals. The sector has been growing steadily at about 9 – 10 percent per annum in recent years, with special emphasis on exports markets. Top ten chemical companies listed in the Indian markets, based on their 2012 revenues are: Company Name Tata Chemicals United Phosphorous Limited BASF India Glycols Pidilite Industries Vikas WSP Phillips Carbon Black Limited Gujarat Heavy Chemicals Aarti Industries Gujarat Alkalies & Chemicals Limited

Indian chemical industry is primarily small scale and scattered. There are over 70,000 chemical manufacturing units throughout the country. India exports chemicals to over 120 countries across the world. Some of these export destinations include United States, Germany, South Korea, Italy, France and Japan. The top ten chemical companies listed in the Indian markets are: Indian Oil Corp. Ltd., Hindustan Petroleum Corp, Ltd., Bharat Petroleum Corp., Ltd., National Chemical & Fertilizer Co., Ltd., Tata Chemicals Ltd., Asian Paints Ltd., Rashtriya Chemicals & Fertilizers Ltd., Jubilant Organosys Ltd., Sun Pharma Global Fze Limited and Gujarat Ambuja Exports Limited.

Wrapping Up: With a vision to become a growth engine of the Indian chemical industry and to make India-designated as a "Fast Track Nation" for implementation of innovation processes through increased investments in R&D in order to reduce the time for technology transfer, product commercialization, new venture creation and establishment of new manufacturing units.

Industries are also proposing a Technology up-gradation fund of ~\$80 Mn during the 12th plan period and preparing our systems to enable us to leverage upon additional USD 100 Mn fund unlocking new avenues for Indian chemicals market.

The chemical industry has grown from \$47 billion in 2004 to \$ 74 billion in 2009. The major growth drivers for the industry have been the strong demand for transportation fuels, especially the motor gasoline; and increase in demand of chemicals as raw material for production of pharmaceuticals, agrochemicals, textiles and construction materials. Some of the other growth drivers have been increase in import of chemicals, low energy prices and increased per capita income.

Source: www.linkedin.com





GROWTH AND SUPPLY CHAIN ISSUES IN CHEMICAL INDUSTRIES

S.KARTIK, VICE PRESIDENT – TAGROS CHEMICALS INDIA PVT. LTD.

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Interview with Shri S. Kartik, Vice President – Procurement, Tagros Chemicals India Pvt. Ltd. Moderated By Editor-in-Chief-Shri H.K. Sharma - MMR Chief Editor- In your many decades' career at Chemical industry, how have you seen the Industry operations evolve? What factors have shaped Chemical supply chain the most over this period?

S.Kartik - The chemical industry today is one which finds solutions to multiple challenges in our lives. Helping us to do things just as we want like writing, painting, decorating, driving, dining or anything else. We have a choice to calibrate and manage the productivity of crops we grow to taking care of our health. From refining metals and petroleum to an industry that touches multiple facets of human, animal and plant life, the chemicals business has evolved over time.

The transformation has been aided by change in thought in the supply chain concepts from supporting bulk transit to multiple and innovative ways of stacking, storing, tracking, and transporting chemicals and end products. The transformation has brought in flexibility, speed and efficiency while improving geographic reach and capacity. A few key factors which have helped this change are developments in communication, data science, material science, design thinking, shipping, automobiles, infrastructure etc

Chief Editor - How has the pandemic changed the way your organization views supply-chain risk and resilience?

S. Kartik - The pandemic brought multiple learnings for the industry. Post pandemic, companies started adopting a data driven approach to risk profiling and management. Change from imports to indigenization and far to near shoring initiatives have been adopted. A resilient supply chain is now viewed as a key differentiator for firm performance.

Chief Editor - What new developments in chemical industry are you most excited about and why?

S. Kartik - Technology developments in green energy, commercialization of nano science, sustainable technologies are points of interest in today's context. Developments today are likely to shape the future for a few centuries and hence these are exciting times.

Chief Editor - Tell about a time when you improved upon a manufacturing process.

S. Kartik - The choice between materials of varied specifications for a process is often a matter of frequent optimization. Changes in market scenarios as they evolve will require us to review the choices many times for attaining desired optimization. While making these choices one needs to consider the manufacturing process end to end and evaluate the impact. Paying a premium may sometimes become surprisingly beneficial. Going pure play may at times become the best choice to leverage on an arbitrage opportunity or to build resilience. These choices are constantly made from the stage of process design to daily operation. The key is to take the calls consciously, each time, leaving the least to chance.

Chief Editor - COVID-19 and recent geopolitical conflicts has led to disruptions in supply chains all over the world but has also brought major supply chain reforms along the way. What strategies have you implemented in the past three years that helped the company to stay ahead of the competition in such difficult times?

S. Kartik - Yes the pandemic was a testing time. Keeping the works going was undoubtedly a challenge given the disruptions. However, practices like supply risk profiling and management, indigenization, near shoring, digitization, optimization etc helped supply chain to remain agile. We spent good time ideating, discussing and planning, while being prepared to do it all over again for a changed scenario. Will here

and now responses were required, long term change in practices were key to navigate through the volatility.

Chief Editor - How do you stay current with the latest developments in chemical industry?

S. Kartik - While we subscribe to industry publications and share thoughts internally, we also engage with industries bilaterally and through industry forums.

Chief Editor - How do you handle and manage hazardous materials and chemicals in a chemical process?

S. Kartik - We adopt best practices around management of wastes. We are a responsible care organization and hold a ISO 9001, ISO 14001, ISO 45001 and ISO 50001 certifications.

Chief Editor - How do you ensure the safety and environmental compliance in your chemical industry?

S. Kartik - Practices like cross functional safety teams and near miss reporting are practiced across our manufacturing facilities. The associates on ground also take part in frequent safety awareness sessions including briefings, poster exhibitions and competitions. A conscious approach to process safety like HAZOP study is undertaken. Tagros has been awarded for Management of Health & Safety by Indian Chemical Council.

Chief Editor - How do you see the role of supply chain management in Chemical Industry by 2030?

S. Kartik - The future is around clean, sustainable, data driven, digital and mobile. Supply chain strategy is soon getting focused on delivering clean and sustainable solutions. The next few years may call for collaborations for new product developments as India goes along the manufacturing wave of chemicals. Infrastructure development and improved choice around modes will also lead to supply chain optimization and efficiency improvement. Leveraging data is getting important by the day as stakeholders are expecting more algorithmic decisions. Transactional aspects to supply chain are getting automated and lot is going mobile. Remote work for supply chain professionals is a reality. There

will be a need to focus on building and retaining talent. Leveraging and integrating cross functional expertise will help supply chains today. Managing supply chain risk shall be a key differentiator for firm performance for the next few years. The supply chain roles will hence get more rounded than they were ever before.

Chief Editor - What are your views on association of professional Associations role on supply chain in Chemical Industry?

S.Kartik - Professional platforms like IIMM are important for peer learning. We consider this a very important aspect for building talent and capability of our team. These forums help us keep abreast of best practices across industries and also to ideate on common challenges. Specific to supply chain the choices are limited and IIMM has a large role to play.



**EXTENSION OF
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SUPPLIER RELATIONSHIP MANAGEMENT

This is the third article in the series of articles for Public Procurement. This is in continuation of second article in the March 2023 issue from pages 30 to 35 titled “NEED ASSESSMENT, FORMULATION OF SPECIFICATIONS AND PROCUREMENT PLANNING”

Supplier Relationship Management

Supplier Relationship Management comprises the following functions:

- i) Ensuring compliance of suppliers to the Code of Integrity for Public Procurement and Integrity Pact (CIPP) if stipulated in Bid Documents;
- ii) Holiday listing; removal from the list of registered suppliers and banning/debarment of firms; and
- iii) Development of new sources and registration of suppliers.

Code of Integrity for Public Procurement (CIPP)

Public procurement is perceived to be prone to corruption and ethical risks. To mitigate this, the officials of Procuring Entities involved in procurement and the bidders/suppliers must abide by the following Code of Integrity for Public Procurement (CIPP). All Procuring officials may be asked to sign declarations to this effect periodically and in various Procurement decisions (including Need Assessment). The bidders/ suppliers should be asked to sign a declaration about abiding by a Code of Integrity for Public Procurement in registration applications and in bid documents, with a warning that, in case of any transgression of this code, its name is not only liable to be removed from the list of registered suppliers, but it would be liable for other punitive actions such as cancellation of contracts, banning and blacklisting or action in Competition Commission of India, and so on.

(Rule 175 of GFR 2017)

Code of Integrity for Public Procurement: Procuring authorities as well as bidders, suppliers, contractors and consultants should observe the highest standard of ethics and should not indulge in the following prohibited practices, either directly or indirectly, at any stage during the procurement process or during execution of resultant contracts:

- i) **“Corrupt practice”:** making offers, solicitation or acceptance of bribe, rewards or gifts or any material benefit, in exchange for an unfair advantage in the

procurement process or to otherwise influence the procurement process or contract execution;

- ii) **“Fraudulent practice”:** any omission or misrepresentation that may mislead or attempt to mislead so that financial or other benefits may be obtained or an obligation avoided. This includes making false declaration or providing false information for participation in a tender process or to secure a contract or in execution of the contract;
- iii) **“Anti-competitive practice”:** any collusion, bid rigging or anti-competitive arrangement, or any other practice coming under the purview of The Competition Act, 2002, between two or more bidders, with or without the knowledge of the procuring entity, that may impair the transparency, fairness and the progress of the procurement process or to establish bid prices at artificial, non-competitive levels;
- iv) **“Coercive practice”:** harming or threatening to harm, persons or their property to influence their participation in the procurement process or affect the execution of a contract;
- v) **“Conflict of interest”:** participation by a bidding firm or any of its affiliates that are either involved in the consultancy contract to which this procurement is linked; or if they are part of more than one bid in the procurement; or if the bidding firm or their personnel have relationships or financial or business transactions with any official of procuring entity who are directly or indirectly related to tender or execution process of contract; or improper use of information obtained by the (prospective) bidder from the procuring entity with an intent to gain unfair advantage in the procurement process or for personal gain; and
- vi) **“Obstructive practice”:** materially impede the procuring entity’s investigation into allegations of one or more of the above mentioned prohibited practices either by deliberately destroying, falsifying, altering; or by concealing of evidence material to the investigation; or by making false statements to investigators and/or by threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or by impeding the procuring entity’s rights of audit or access to information;

Obligations for Proactive Disclosures

- i) Procuring authorities as well as bidders, suppliers, contractors and consultants, are obliged under Code of Integrity for Public Procurement to suo-moto proactively declare any conflicts of interest (coming under the definition mentioned above – preexisting

or as and as soon as these arise at any stage) in any procurement process

or execution of contract. Failure to do so would amount to violation of this code of integrity; and
- ii) Any bidder must declare, whether asked or not in a bid document, any previous transgressions of such a code of integrity with any entity in any country during the last three years or of being debarred by any other procuring entity. Failure to do so would amount to violation of this code of integrity.
- iii) To encourage voluntary disclosures, such declarations would not mean automatic disqualification for the bidder making such declarations. The declared conflict of interest may be evaluated and mitigation steps, if possible, may be taken by the procuring entity. Similarly voluntary reporting of previous transgressions of Code of Integrity elsewhere may be evaluated and barring cases of various grades of debarment, an alert watch may be kept on the bidder's actions in the tender and subsequent contract.

Punitive Provisions: Without prejudice to and in addition to the rights of the procuring entity to other penal provisions as per the bid documents or contract, if the procuring entity comes to a conclusion that a (prospective) bidder/supplier, directly or through an agent, has violated this code of integrity in competing for the contract or in executing a contract, the procuring entity may take appropriate measures including one or more of the following:

- i) if his bids are under consideration in any procurement
 - a) Forfeiture or encashment of bid security
 - b) calling off of any pre-contract negotiations, and;
 - c) rejection and exclusion of the bidder from the procurement process
- ii) if a contract has already been awarded
 - a) Cancellation of the relevant contract and recovery of compensation for loss incurred by the procuring entity,;
 - b) Forfeiture or encashment of any other security or bond relating to the procurement;
 - c) Recovery of payments including advance payments, if any, made by the procuring entity along with interest thereon at the prevailing rate;

iii) Provisions in addition to above:

- a) Removal from the list of registered suppliers and banning/debarment of the bidder from participation in future procurements of the procuring entity for a period not less than one year;
- b) In case of anti-competitive practices, information for further processing may be filed under a signature of the Joint Secretary level officer, with the Competition Commission of India;
- c) Initiation of suitable disciplinary or criminal proceedings against any individual or staff found responsible.

Conduct of Public Servants in Public Procurement - Risks and Mitigations

Risk Mitigation

Hospitality: Hospitality (including facilitation of travel, lodging, boarding and entertainment during official or unofficial programs) from suppliers may tend to cross the limits of ethical/ occasional/routine/modest/ normal business practice. Officials sent to firm's premises for inspections/ meetings may mistakenly presume entitlement to hospitality from the firm, even if other arrangements are available at the location. Hospitality must never be solicited, directly or indirectly. The frequency, scale and number of officials availing hospitality should not be allowed to identify the recipient in a public way with any particular contractor, supplier or service provider or raise doubts about its neutrality. It should not involve significant travel, overnight accommodation or trips abroad. Particular care should be taken in relation to offers of hospitality from firms (say participating in current or imminent tenders or its execution) who stand to derive a personal or commercial benefit from their relationship with the recipient.

Gifts: Gifts from suppliers may tend to cross the limits of ethical/ occasional/routine/modest/ normal business practice, especially on festive season. Since the value of the gift may not be known to the recipient, it may cause inadvertent violation of Conduct rules. Gifts must never be solicited, directly or indirectly. An official should not accept and retain gifts more valuable than the limit as laid down in the conduct rules. Cash, gift cheques or any vouchers that may be exchanged for cash may not be accepted regardless of the amount. Particular care should be taken in relation to gifts from firms (say participating in current or imminent tenders or its execution) who stand to derive a personal or commercial benefit from their relationship with the recipient. Any gift received inadvertently in violation of above, must immediately either be returned or else reported and deposited in Toshakhana/Treasury.

Private Purchases from Official

Suppliers: Procuring Officials may mistakenly consider

it innocuous to seek discounts in private procurements from suppliers having official dealings or its associates(especially from Rate Contract holders).

Officials involved in Public Procurement must never indulge in any non-official pecuniary transaction with the contractors, suppliers or service providers with whom they have official dealings; including seeking or accepting special facilities or discounts on private purchases (particularly same items which are being ordered officially on rate contracts).

Sponsorship of Events: Procuring Officials may mistakenly consider it innocuous to seek financial favours (donations, advertisements for souvenirs, and contributions in cash or kind) in relation to sponsoring of cultural, social, charitable, religious, or sporting events, in the false belief that since he/she is personally not benefitted, it would not be a violation of CIPP.

Officials involved in Public Procurement must never indulge in any non-official pecuniary transaction with the contractors, suppliers or service providers with whom they have official dealings; including soliciting of sponsorship for unofficial and private cultural, social, sporting, religious, charitable or similar organisations or events.

Integrity Pact (IP)

The Pre-bid Integrity Pact is a tool to help Governments, businesses and civil society to fight corruption in public contracting. It binds both buyers and sellers to ethical conduct and transparency in all activities from pre-selection of bidders, bidding and contracting, implementation, completion and operation related to the contract. This removes insecurity of Bidders, that while they themselves may abjure Bribery, but their competitors may resort to it and win contract by unfair means.

Ministry of Finance, Department of Expenditure have mandated 32 Ministries/ Departments and their attached/ subordinate offices (including autonomous bodies) to incorporate Integrity Pact by, depending on the nature of procurements/ contracts above a threshold value. The nature of procurement and threshold of value is to be decided by the Ministries/ Departments with approval of the Minister in charge. As guidance, the threshold should be such as to cover bulk (80-90% - eighty to ninety percent by value) of its procurement expenditure.

“The pact essentially envisages an agreement between the prospective vendors/bidders and the buyer, committing the persons/officials of both sides, not to resort to any corrupt 32OM No.14(12)/ 2008- E-II(A) dated 19th July 2011 practices in any aspect/stage of the contract. Only those vendors/bidders, who commit themselves to such a Pact with the buyer, would be considered competent to participate in the bidding process. In other words, entering into this Pact would be a preliminary qualification. The essential ingredients

of the Pact include:

- 1) Promise on the part of the Procuring Entity to treat all bidders with equity and reason and not to seek or accept any benefit, which is not legally available;
- 2) Promise on the part of bidders not to offer any benefit to the employees of the Procuring Entity not available legally and also not to commit any offence under Prevention of Corruption Act, 1988 or Indian Penal Code 1860;
- 3) Promise on the part of Bidders not to enter into any undisclosed agreement or understanding with other bidders with respect to prices, specifications, certifications, subsidiary contracts, etc;
- 4) Undertaking (as part of Fall Clause) by the Bidders that they have not and will not sell the same material/ equipment at prices lower than the bid price;
- 5) Foreign bidders to disclose the name and address of agents and representatives in India and Indian Bidders to disclose their foreign principals or associates;
- 6) Bidders to disclose the payments to be made by them to agents / brokers or any other intermediary;
- 7) Bidders to disclose any past transgressions committed over the specified period with any other company in India or Abroad that may impinge on the anti corruption principle;
- 8) Integrity Pact lays down the punitive actions for any violation;
- 9) **Integrity Pact (IP) would be implemented through a panel of Independent External Monitors (IEMs):** shall be appointed by the organization in consultation with Central Vigilance Commission. Names and contact details of the Independent External Monitor(s) should be listed in Notice Inviting Tender (NIT). The IEM would review independently and objectively, whether and to what extent parties have complied with their obligations under the Pact. Government of India organizations and Public Sector Undertakings desirous of implementing Integrity Pact are required to select at most three persons (below the age of 70 (seventy) years) of high integrity and reputation as Independent External Monitors (IEM) after due diligence and forward to the CVC for its approval. Only those officers of Government of India Departments or Public Sector Undertakings, who have retired from top management positions, would be considered for appointment as IEM, provided they are neither serving or retired from the same organization. Eminent persons, retired judges of High/ Supreme Courts, executives of private sector of considerable eminence could also be considered for functioning as Independent

External Monitors. The appointment of Independent External Monitors would be for an initial period of three years and could be extended for another term of two years (maximum tenure of five years). Names and contact details of the Independent External Monitor(s) should be listed in Notice Inviting Tender (NIT).

10) **In tenders meeting the criteria of threshold value/nature of procurement:** Integrity Pact clause and format should be included in the Bid Documents. Each page of such Integrity pact proforma would be duly signed by Purchaser's competent signatory. All pages of the Integrity Pact are to be returned by the bidder (along with the technical bid) duly signed by the same signatory who signed the bid, i.e. who is duly authorized to sign the bid and to make binding commitments on behalf of his company. Any bid not accompanied by Integrity Pact duly signed by the bidder shall be considered to be a nonresponsive bid and shall be rejected straightway.

11) **Role / Functions of IEMs:** The Monitors would not be subject to instructions by the representatives of the parties and should perform their functions neutrally and independently. They would review independently and objectively, whether and to what extent parties have complied with their obligations under the Integrity Pact. For this purpose, they would have access to all contract documents / books of accounts of the bidders in case of any allegation of violation of any provisions of the Integrity Pact or payment of commission, whenever required. The IEMs will have the option to participate in such meetings among the parties related to the project provided such meetings could have an impact on the contractual relations between the parties. Ideally all IEMs of an organization should meet once every two months to take stock of ongoing tendering process. The IEMs would examine all complaints received by them and give their recommendations / views to the designated officer of the Procuring Entity, at the earliest.

The Monitors would also inform the Procuring Entity, if they notice or have reason to believe, a violation of the Integrity Pact. They may also send their report directly to the Central Vigilance Commission, in case of suspicion of serious irregularities requiring legal/ administrative action. At least one IEM would be invariably cited in the NIT.

However for ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter should be examined by the full panel of IEMs, who would look into the records, conduct an investigation, and submit their joint recommendations. The recommendations of IEMs would be in the nature of advice and would not be legally binding. IEMs

may not be equated with consultants in the Procuring Entity. Their role is independent in nature and the advice once tendered would not be subject to review. The role of the Chief Vigilance Officer (CVO) of Procuring Entity shall remain unaffected by the presence of IEMs. A matter being examined by the IEMs can be separately investigated by the CVO, if a complaint is received by him or directed to him by the CVC. As per para 5.13 of CVC OM No. 05/01/22 issued vide letter No. 015/VGL/091 dated 25.01.2022, in the event of any dispute between the management and the contractor relating to those contracts where Integrity Pact is applicable, in case, both the parties are agreeable, they may try to settle dispute through mediation before the panel of IEMs in a time bound manner. If required, the organizations may adopt any mediation rules for this purpose. In case, the dispute remains unresolved even after mediation by the panel of IEMs, the organization may take further action as per the terms & conditions of the contract.

Development of New Sources and Registration of Suppliers

Ensuring an up-to-date and current list of registered, capable and competent suppliers facilitates efficiency, economy and promotion of competition in public procurement, especially where open tendering is not resorted to. The list may be referred to while floating a limited tender/local purchase/direct contracting. For such tenders, it may be possible to skip bidder qualification so as to avoid unnecessary repetition/duplication of records thereby saving time, especially in the case of emergency procurement. For goods and services not available on GeM, Head of Ministry/ Department may also register suppliers of goods and services which are specifically required by that Department or Office, periodically.

Registration of the supplier should be done following a fair, transparent and reasonable procedure and after giving due publicity. Such registered suppliers should be boarded on GeM as and when the item or service gets listed on GeM. The list of registered suppliers for the subject matter of procurement be exhibited on websites of the Procuring Entity/ their e-Procurement portals.]33.

Ministries / Departments with a significant volume of procurements may follow their own policies and procedures for registration of vendors, if already existing. The policies and procedures for registration described below is for guidance of Ministries/ Departments, who do not have their own laid down policies/ procedures for registration. The Ministry/ Department shall notify the authorities competent to deal with the applications and grant registrations, along with their jurisdictions. The appellate authority shall be at least one level above the registering authority or as designated by the Ministry/ Department.

All Ministries/ Department may use such lists prepared

by other Ministries / Departments as and when necessary. Registered suppliers are ordinarily exempted from furnishing earnest money deposit/bid security with their tenders in tenders for items, and Monetary Limits for which they are registered. The list of registered suppliers for the subject matter of procurement be exhibited on the Central Public Procurement Portal and websites of the Procuring Entity/ e-procurement/ portals.

Categories for Registration

In case of procurement of goods, the Administrative Department shall register firms as suppliers of goods in different trade groups of goods in the following broad categories:

- i) Manufacturers, who supply indigenous items;
- ii) Agents/distributors of such manufacturers, who desire to market their production only through their agents;
- iii) Foreign manufacturers with/without their accredited agent in India;
- iv) Stockists of imported spares or other specified items; and
- v) Suppliers of imported goods as are having regular arrangement with foreign manufacturers.

One of the main prerequisites for registration as a manufacturer is that the firm should possess its own in-house testing facilities. In case of MSE units, the firm need not have its own testing facilities but regular arrangements with other reputed Government or Government-approved or private agencies in its area for testing of products. Before the manufacturer is included in the list of registered suppliers, Procuring Entity shall verify the bona fides and standing of the firm. Procuring Entity may also seek assistance from the inspection wing of other inspecting agencies. In case of firms having an established quality maintenance system with ISO 9001- 2000 certification (latest version) by authorised agencies, Procuring Entity may consider registration of such firms without carrying out capacity assessment.

Grades (Monetary Limits) for Registration

Registration should be done by grading the firms (Grade A, B, and so on) on their capability for executing contract orders of different monetary limits in the relevant category of 33 Amended vide DoE OM No. F.1/26/2018-PPD dated 02.04.2019. requirements. The monetary limits should be carefully fixed keeping in view the banker's reports, capacity and capability of the firm and other financial information indicated in the balance sheets, profit and loss statements:

- i) Grade-A: Rs. 25 (Rupees twenty-five) lakh and above;

- ii) Grade B: Rupees five lakh to Rs.25(Rupees twenty-five) lakh; and
- iii) Grade C: Rupees One lakh and up to Rupees five lakh

The firms that are registered for supply of orders valued above Rupees five lakh should invariably be manufacturers or their authorised agents. Procuring Entity shall register the manufacturers and not agents or middlemen. A sole selling agent/authorised agent could be considered for registration, subject to the condition that Procuring Entity is satisfied that he is the sole selling agent of manufacturers, and financial and technical capabilities of the manufacturers are ascertained by Procuring Entity. The availability of a suitable arrangement with the sole selling agent for after-sales service shall also be ensured and Procuring Entity shall also satisfy itself that a valid legal agreement exists between the applicant unit and its sole selling agent, during the period for which he is registered.

Procedure for Registration: The procedure to be adopted in this regard by the Central Purchase Organization or by any Ministry / Department in case it desires to register suppliers of goods which are exclusively needed by it. Registration of suppliers should be done ensuring fundamental principles of public procurement in view (especially the transparency principle - transparency, fairness, equality, competition and appeal rights) with the approval of CA after carefully assessing and verifying credentials, capability, quality control systems, past performance, after-sales service facilities, financial background, and so on, of the supplier/contractor/ service provider(s):

- i) Registration of the suppliers should be done following a fair, transparent and reasonable procedure and after giving due publicity. Details of the procedure for registration of new firms may be uploaded on the website and also published in the form of a booklet for information of the suppliers. Timeframes and criteria for registration of new suppliers may be clearly indicated;
- ii) Possible sources for any category/group of requirements can be identified based on internal and external references. Data of new suppliers can be obtained from the response received from suppliers, open tender advertisements, pre-qualification bids, Expression of Interest (EoI), against various enquiries on the website, dedicated websites, exhibitions, buyer-seller meets, various publications of NSIC, Development Commissioner of the Small Industries Service Institute, BIS, trade journals, and so on. The e-procurement portal does pre-registration of suppliers online. Such data can be a source of information on prospective suppliers;
- iii) New supplier(s) may be considered for registration at any time, provided they fulfil all the required

conditions. For any larger scale or critical registration or development of new suppliers, Procuring Entity should call for EoI by publicising its need for development of sources. The stages to be followed together with the applicable guidelines for EoI have been detailed in Chapter 5;

- iv) While registering the firms, an undertaking may be obtained from them that they will abide by the CIPP enclosed with the application with a clear warning that, in case of transgression of the code of integrity, their names are likely to be deleted from the list of registered suppliers, besides any other penalty or more severe action as deemed fit; and
- v) Along with the new/renewal application for registration, the suppliers should also be asked to declare that, if awarded a contract in any LTE in which they participate, they bind themselves to abide by the Procuring Entity's General Conditions of Contract (GCC). Such GCC should be part of the application.
- vi) **Eligibility**
 - a) Any firm, situated in India or abroad, which is in the business of providing goods/works/services of specified categories of interest, shall be eligible for registration;
 - b) Where registration is granted based on partly outsourced arrangements/agreements, it shall be the responsibility of the registered unit, to keep such arrangements/agreements renewed/alive at all times, to keep their registration valid for the period for which it has been granted. Any failure in this regard may make the registration null and void ineffective retrospectively from any such dates which the registering authority considers appropriate;
 - c) Suppliers should possess valid Digital Signature Certificate (DSCs) Class III with the company name at the time of registration/ renewal, so as to enable them to participate in e-procurements
 - d) Firm, against whom punitive action has been taken, shall not be eligible for re-registration during the currency of punitive action. Registration requests may not be entertained from such firms, stakeholders of whom have any interest in deregistered/banned firms;
 - e) The application form, complete in all respects and accompanied with the requisite processing fee and prescribed documents shall be submitted by the firms to the registering authority. The registration application form, duly filled in, when received from the firms shall be scrutinised carefully for assessing the capacity and capability of the firms including credentials, manufacturing capability, quality control system, past performance, after-sales

service facilities, financial background, and so on, of the applicant. References shall be made to other firms of standing of whom the applicant firm claims to be a supplier/contractor. Likewise, the applicant firm's bankers may also be requested to advice about the financial standing of the firm. Registration of suppliers should be done with the approval of CA.

- f) In cases where the firm is not considered capable and registration cannot be granted, the concerned authority shall communicate the deficiencies and shortcomings direct to the firms under intimation to the appellate authority.

Where a request for re-verification and review is made by the firm, along with any fee as prescribed and within the period prescribed by the Department, review shall be undertaken. Requests for re-verification after expiry of the said period would be treated as a fresh application and processing fee, if any prescribed, charged accordingly;

- g) Registration should be for specific trade groups of goods/works/services. For this purpose, all goods/works/services should be divided into trade groups and the information published on the relevant portals/ websites;
- h) It should be mentioned in the letter of registration that the registration is valid for a period of one to three years and would be considered for extension based (on application by the supplier/contractor/ service provider) on satisfactory performance of the firm. However, the registration would be initially treated as provisional and it would be treated as confirmed only after the firm has satisfactorily executed one order of the relevant category and value from Procuring Entity. The extension of validity of registration is not a matter of right and Procuring Entity reserves the right not to extend such registration without assigning any reason. New supplier(s) may also be considered for registration at any time, provided they fulfil all the required conditions;
- i) All registered suppliers should be allocated a unique registration number.

Once the firms are registered, a circular shall be issued by the registration authority indicating the names and addresses of the registered suppliers with details of the requirements and monetary value they will supply as well as the validity period, and so on, for which they are registered. The list of registered suppliers for the subject matter of procurement be exhibited on the Central Public Procurement Portal and websites of the Procuring Entity/ e-Procurement/ portals;
- j) Within the monetary limits so prescribed, as also for the category of registration, the registered firm

may be exempted from depositing the Earnest Money Deposit (EMD). In other categories and higher monetary limits, the supplier would be treated as any unregistered supplier and not be entitled to the privileges of a registered supplier. The monetary limit or category, so laid down, does not, however, debar a firm from getting orders in excess of the monetary limit or for other categories, provided the Procuring Entity is satisfied about the capacity and capability of the firm but a requisite security deposit should be obtained, as is being done in the case of unregistered firms;

- k) Performance and conduct of every registered supplier is to be watched by the concerned Department. Procuring Entity should also reserve the right to remove firms who do not perform satisfactorily, even during the validity of registration (after giving due opportunity to the supplier to make a representation) if they fail to abide by the terms and conditions of the registration or fail to execute contracts on time or supply substandard goods or make any false declaration to any Government agency or for any ground which, in the opinion of the Government, is not in public interest;
- l) Procuring Entity shall retain its option to reassess firms already registered, at any later date, to satisfy itself about the current financial soundness/credit worthiness, facilities available, and so on. Thereafter, Procuring Entity may decide to retain them as registered suppliers for the requirements and monetary limit earlier considered or with necessary changes as deemed fit. In case of adverse reports from the team of Procuring Entity officers who reassess the firm, Procuring Entity shall delete such firm from the registered suppliers list; (Rule 150 of GFR 2017)

Empanelment of contractors: Public authorities may empanel/register contractors of those specific goods and services which are required by them regularly. Performance of such empanelled contractors should be reviewed periodically. The list of registered contractors shall be updated on a regular basis. The category/ class of contractors may be upgraded/ downgraded or contractors may be de-listed based on their performance.

Empanelment of contractors shall be done in a fair and equitable manner, preferably online after giving due publicity.

Debarment of Suppliers

Registration of suppliers and their eligibility to participate in Procurement Entity's procurements is subject to compliance with Code of Integrity for Public Procurement and good performance in contracts. Rule 151 of General Financial Rules (GFR), 2017 states the following regarding the 'Debarment from Bidding':-

- i. A bidder shall be debarred if he has been convicted of an offence-
 - (a) under the Prevention of Corruption Act, 1988; or
 - (b) the Indian Penal Code or any other law for the time being in force, for causing any loss of life or property or causing a threat to public health as part of execution of a public procurement contract.
- ii. A bidder debarred under sub-section (i) or any successor of the bidder shall not be eligible to participate in a procurement process of any procuring entity for a period not exceeding three years commencing from the date of debarment. Department of Commerce (DGS&D) will maintain such list which will also be displayed on the website of DGS&D as well as Central Public Procurement Portal.
- iii. A procuring entity may debar a bidder or any of its successors, from participating in any procurement process undertaken by it, for a period not exceeding two years, if it determines that the bidder has breached the code of integrity. The Ministry/ Department will maintain such list which will also be displayed on their website.
- iv. The bidder shall not be debarred unless such bidder has been given a reasonable opportunity to represent against such debarment. Since, DGS&D had been wind up on 31.10.2017, PPD, DoE did consultations on the issue of Debarment with major procuring Ministries/ Departments and issued the following 'Debarment Guidelines' in suppression to all earlier instructions on this subject³⁴.

Guidelines on Debarment of firms from Bidding

1. The guidelines are classified under following two types:-
 - i) In cases where debarment is proposed to be limited to a single Ministry, the appropriate Orders can be issued by that Ministry itself, thereby banning all its business dealing with the debarred firm.
 - ii) Where it is proposed to extend the debarment beyond the jurisdiction of the particular Ministry i.e. covering to all central Ministries/ Departments, the requisite Orders shall be issued by Department of Expenditure (DoE), Ministry of Finance (MoF).

Definitions

- a) Firm: The term 'firm' or 'bidder' has the same meaning for the purpose of these Guidelines, which includes an individual or person, a company, a cooperative society, a Hindu undivided family and an association or body of persons, whether incorporated or not, engaged in trade or business.
- b) Allied firm: All concerns which come within the

sphere of effective influence of the debarred firms shall be treated as allied firms. In determining this, the following factors may be taken into consideration:

1. Whether the management is common;
2. Majority interest in the management is held by the partners or directors of banned/ suspended firm;
3. Substantial or majority shares are owned by the banned/ suspended firm and by virtue of this it has a controlling voice.
4. Directly or indirectly controls, or is controlled by or is under common control with another bidder.
5. All successor firms will also be considered as allied firms.

The terms “banning of firm”, ‘suspension’, ‘Black-Listing’ etc. convey the same meaning as of “Debarment”.

2. Debarment by a Single Ministry/ Department

Orders for Debarment of a firm(s) shall be passed by a Ministry/ Department/organizations, keeping in view of the following:

- i) A bidder or any of its successors may be debarred from participating in any procurement process for a period not exceeding two years.
- ii) Firms will be debarred if it is determined that the bidder has breached the code of integrity as per Rule 175 of GFRs 2017. (Refer to para 3.2 of this Manual for further reading on Code of Integrity).
- iii) A bidder can also be debarred for any actions or omissions by the bidder other than violation of code of integrity, which in the opinion of the Ministry/Department, warrants debarment, for the reasons like supply of sub-standard material, non-supply of material, abandonment of works, sub-standard quality of works, failure to abide “Bid Securing Declaration” etc.
- iv) It shall not be circulated to other Ministries/ Departments. It will only be applicable to all the attached/ subordinate offices, Autonomous bodies, Central Public Sector Undertakings (CPSUs) etc. of the Ministry/ Department issuing the debarment Order.
- v) The concerned Ministry/ Department before issuing the debarment order against a firm must ensure that reasonable opportunity has been given to the concerned firm to represent against such debarment (including personal hearing, if requested by firm).
- vi) Secretary of Ministry/Department may nominate an officer at the rank of Joint Secretary/Additional

Secretary as competent authority to debar the firms.

- vii) Ministry/ Department that issued the order of debarment can also issue an Order for revocation of debarment before the period of debarment is over, if there is adequate justification for the same. Ordinarily, the revocation of the Order before expiry of debarred period should be done with the approval of Secretary concerned of Ministry/ Department.
- viii) The Ministry/Department will maintain list of debarred firms, which will also be displayed on its website.
- ix) Debarment is an executive function and should not be allocated to Vigilance Department.
3. It is possible that the firm may be debarred concurrently by more than one Ministry/ Department. Ministries/ Departments at their option may also delegate powers to debar bidders to their CPSUs, Attached Offices/ Autonomous Bodies etc. In such cases, broad principles for debarment in para 2 as above are to be kept in mind. Debarment by such bodies like CPSUs etc. shall be applicable only for the procurements made by such bodies.

Similarly, Government e-Marketplace (GeM) can also debar bidders up to two years on its portal. In case of debarments done by CPSUs, revocation of the debarment orders before expiry of debarred period should be done only with the approval of Chief Executive Officer of concerned CPSUs etc.

4. Debarment across All Ministries/ Departments

- i) Where a Ministry/ Department is of the view that business dealings with a particular firm should be banned across all the Ministries/ Departments by debarring the firm from taking part in any bidding procedure floated by the Central Government Ministries/ Departments, the Ministry/ Department concerned, should after obtaining the approval of the Secretary concerned, forward to DoE a self-contained note setting out all the facts of the case and the justification for the proposed debarment, along with all the relevant papers and documents. DoE will issue the necessary orders after satisfying itself that proposed debarment across all the Ministries/Departments is in accordance with Rule 151 of GFRs, 2017. This scrutiny is intended to ensure uniformity of treatment in all cases.
- ii) The firm will remain in suspension mode (i.e. debarred) during the interim period till the final decision taken by DoE, only in the Ministry/ Department forwarding such proposal.

- iii) Ministry/ Department before forwarding the proposal to DoE must ensure that reasonable opportunity has been given to the concerned firm to represent against such debarment (including personal hearing, if requested by firm). If DoE realizes that sufficient opportunity has not be given to the firm to represent against the debarment, such debarment requests received from Ministries/ Departments shall be rejected.
- iv) DoE can also give additional opportunity, at their option, to firm to represent against proposed debarment. DoE can also take suo-moto action to debar the firms in certain circumstances.
- v) No contract of any kind whatsoever shall be placed on the debarred firm, including its allied firms by any Ministries/ Departments/ Attached/ Subordinate offices of the Government of India including autonomous body, CPSUs etc. after the issue of a debarment order.
- vi) DoE will maintain list of such debarred firms, which will be displayed on Central Public Procurement Portal.

5. Revocation of Orders

- i) An order for debarment passed shall be deemed to have been automatically revoked on the expiry of that specified period and it will not be necessary to issue a specific formal order of revocation.
- ii) A debarment order may be revoked before the expiry of the Order, by the competent authority, if it is of the opinion that the disability already suffered is adequate in the circumstances of the case or for any other reason.

6. Other Provisions (common to both types of debarment)

- i) No contract of any kind whatsoever shall be placed to debarred firm including its allied firms after the issue of a debarment order by the Ministry/ Department. Bids from only such firms shall be considered for placement of contract, which are neither debarred on the date of opening of tender (first bid, normally called as technical bid, in case of two packet/two stage bidding) nor debarred on the date of contract. Even in the cases of risk purchase, no contract should be placed on such debarred firms.
- ii) If case, any debar firms has submitted the bid, the same will be ignored. In case such firm is lowest (L-1), next lowest firm shall be considered as L-1. Bid security submitted by such debarred firms shall be returned to them.
- iii) Contracts concluded before the issue of the

debarment order shall, not be affected by the debarment Orders.

- iv) The Debarment shall be automatically extended to all its allied firms. In case of joint venture/ consortium is debarred all partners will also stand debarred for the period specified in Debarment Order. The names of partners should be clearly specified in the “Debarment Order”.
- v) Debarment in any manner does not impact any other contractual or other legal rights of the procuring entities.
- vi) The period of debarment shall start from the date of issue of debarment order.
- vii) The Order of debarment will indicate the reason(s) in brief that lead to debarment of the firm.
- viii) Ordinarily, the period of debarment should not be less than six months.
- ix) In case of shortage of suppliers in a particular group, such debarments may also hurt the interest of procuring entities. In such cases, endeavour should be to pragmatically analyze the circumstances, try to reform the supplier and may get a written commitment from the supplier that its performance will improve.
- x) All Ministries/ Departments must align their existing Debarment Guidelines in conformity with these Guidelines. Further, bidding documents must also be suitably amended, if required.

Safeguarding Procuring Entity’s Interests during debarment of suppliers: Suppliers are important assets for the procuring entities and punishing delinquent suppliers should be the last resort. It takes lot of time and effort to develop, register and mature a new supplier. In case of shortage of suppliers in a particular group of materials/equipment, such punishment may also hurt the interest of Procuring Entity. Therefore, views of the concerned Department may always be sought about the repercussions of such punitive action on the continuity of procurements. Past records of performance of the supplier may also be given due weightage. In case of shortage of suppliers and in cases of less serious misdemeanours, the endeavour should be to pragmatically analyse the circumstances, reform the supplier and get a written commitment from the supplier that his performance will improve. If this fails, efforts should be to see if a temporary debarment can serve the purpose. (Rule 151 of GFR 2017)

Compulsory Enlistment of Indian Agents : Ministries/ Departments if they so require, may enlist Indian agents, who desire to quote directly on behalf of their foreign principals³⁵. (Rule 152 of GFR 2017) 35Rule



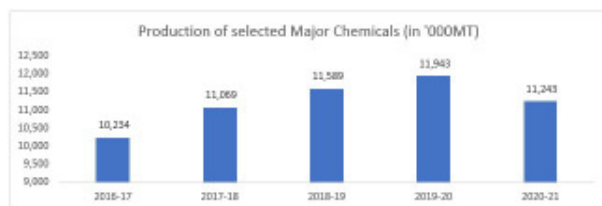
GROWING PROSPECTS OF INDIA'S CHEMICAL INDUSTRY

Chemical industry in India

The chemical industry is both a knowledge- and capital-intensive sector. It is an integral component of the Indian economy and growing at sustained pace. Petrochemicals, fertilisers, paints, varnishes, gases, soaps, perfumes, toiletries and pharmaceuticals are included in the category of basic chemicals and their by-products. The chemical sector has numerous categories, encompassing more than 80,000 commercial items. The industry plays a crucial role in providing for basic requirements and raising the quality of life in India. The sector is the backbone of the country's industrial and agricultural development. It serves as the foundation for several downstream industries, including textile, paper, paint varnish, soap, detergent and pharmaceuticals.

The Central Statistics Office's National Accounts Statistics 2021 states that the gross value added (GVA) for all economic activities in the chemical and chemical product sectors was 1.21% through 2019-20 as against 1.14% through 2018-19 at constant prices. This sector's contribution to the manufacturing sector's GVA increased from 6.25% through 2018-19 to 7.08% through 2019-20.

Total production of major chemicals have increased to 11,243 MT in 2020–2021 from 10,234 in 2016-17. Alkali chemicals made up around 69% of all production of major chemicals in 2020-21. The Indian chemical industry was estimated to be worth around US\$ 178 billion in FY20 and is anticipated to reach US\$ 300 billion in FY25.



Source: Department of Chemicals and Petrochemicals Annual Report

Government's initiative to promote chemical industry

To boost the growth of the chemical industry in India, the Government of India (GoI) has implemented the following schemes/policies.

Petroleum, Chemicals and Petrochemical Investment Regions (PCPIRs)

The Indian government has envisioned the PCPIRs as clusters that offer investors a transparent and investment-friendly policy and facility framework. PCPIRs have a first-rate infrastructure and provide a competitive environment favourable to business establishments. Each PCPIR covers a carefully defined area of around 250 sq. km. Along with supporting logistics and other services, these regions will have manufacturing facilities. In total, four PCPIRs have been established by the Ministry of Chemicals and Petrochemicals in Vishakhapatnam-Kakinada, Andhra Pradesh; Dahej, Gujarat; Cuddalore and Nagapattinam, Tamil Nadu; and Paradeep, Odisha. The estimated investment required to realise PCPIRs fully is Rs. 7.63 lakh crore (US\$ 93.3 billion).

Chemicals Promotion and Development Scheme

To support the growth and development of the chemical and petrochemical industries, the Chemicals Promotion and Development Scheme (CPDS) was launched to create knowledge products through studies, surveys, data banks, promotional materials, etc., and disseminate the knowledge through holding seminars, conferences, exhibitions and other events. In addition, the programme rewards exceptional work in the fields of chemicals and petrochemicals to encourage research and innovation.

Production Linked Incentive (PLI) Scheme

The National Programme on Advanced Chemistry Cell (ACC) Battery Storage Production Linked Incentive (PLI) Scheme with a budgetary outlay of Rs. 18,100 crores (US\$ 2.2 billion) were approved by the GoI to

improve India's manufacturing capabilities by achieving a manufacturing capacity of 50 Giga Watt Hours (GWh) of ACC. The central government is focusing on improving domestic value addition under this plan while ensuring that India's levelized battery production cost is competitive globally. The scheme envisions an investment that will increase domestic manufacturing, facilitate the creation of demand for stationary storage and battery storage for both electric vehicles and stationary storage, develop a fully domestic supply chain and attract foreign direct investments to the country.

Recent developments to boost the future of the chemical industry in India

- Indian Potash Limited (IPL) and Israel Chemicals Limited (ICL) inked a memorandum of understanding (MOU) to deliver muriate of potash (MOP) from 2022 to 2027. The deal will help increase agricultural production and enhance the lives of farmers in India.
- IFFCO began producing nano-urea and working on nano-DAP to increase the efficiency of nutrient utilisation while using less nano-urea than current levels in fertilisers.
- By utilising "Green Hydrogen," the Gol hopes to fulfil the vision of Atmanirbhar Bharat by locally producing urea and DAP.
- The Department of Chemicals and Fertilizers established a Joint Task Force to investigate ways to use petroleum and petrochemical industry waste products to manufacture vital intermediates for pharmaceutical and agrochemical industries.
- To increase the supply of DAP and NPK fertilisers for the country's farmers, Madras Fertilizers Limited signed an MoU to purchase 30,000 MT of phosphoric acid solution from M/s Agrifields, Dubai, on an annual basis for the next three years.

Exports of the chemical industry

Indian chemical exports increased by 106% from 2013–14 to 2021–22. Chemical exports from India reached a new high of US\$ 29.3 billion in 2021–22, compared with US\$ 14.2 billion in 2013–14. The increase in shipments of organic, inorganic, agrochemical, dyes and dye intermediates and speciality chemicals have contributed to the

expansion of chemical exports.

With a "Make in India" philosophy, the Indian chemical sector is now a key competitor on the international stage and generates foreign exchange for the country. As a chemical producer, India ranks third in Asia and sixth globally. Moreover, India is ranked 14th in the world for chemical exports. The country currently leads the world in dye production, with export of dyestuffs ranging from 16% to 18% in 2021-22.

India exports dyes to more than 90 countries. Furthermore, India produces more than 50% of pesticides of the technical grade and is the fourth-largest producer of agrochemicals worldwide. Agrochemical exports from India to the rest of the world are close to 50%. India produces and exports the most castor oil in the world, accounting for 85-90% of all exports in this industry worldwide. India sells castor oil to more than 175 nations, with the US, China and new markets, including Turkey, Russia and Northeast Asian countries, ranking as its top export destinations.

Conclusion

With the support of the Indian government, the chemical industry in India witnessed significant growth. The industry has been modernising over time through the development of novel molecules, technological advancements, improvement in product quality and launch of new product profiles to become a contemporary world-class chemical industry prepared to face international competition.

Even at a time of increased global unpredictability, the sector remains a desirable centre for prospects. Global dynamics that are affecting the chemical industry would present lucrative opportunities for the Indian chemical sector in the near future. The strategic choice to prioritise and realise this value-creation potential would determine the direction of India's chemical sector and its trade performance in the future.

Selected major Chemicals: Alkali Chemicals, Inorganic Chemicals, Organic Chemicals, Pesticides & Insecticides, Dyes & Pigments

Source: www.ibef.org



INDIA'S CHEMICAL INDUSTRY: UNLEASHING THE NEXT WAVE OF GROWTH

ANAND DESAI, MANAGING DIRECTOR, ANUPAM RASAYAN LIMITED

The Indian chemical industry is one of the most important components of our economy and contributes around 7% to the nation's Gross Domestic Product (GDP). Amidst the global pandemic, the chemical industry has been one of the only few sectors to have not only survived it but also grown by leaps and bounds. Taking into consideration that India is the 6th largest producer of chemicals in the world and 3rd in Asia has aided the Indian chemical industry which is now set to capitalize on forthcoming opportunities.

In 2019, the Indian chemicals industry stood at US\$ 178 billion and is anticipated to reach US\$ 304 billion by 2025, registering a CAGR of 9.3%. This estimation is predicated on the Indian chemical industry's ability to consistently create significant impacts on a global scale. However, this has indeed raised prospects for sustained, continual growth of the Indian chemical industry's top and bottom lines.

Furthermore, it has also been observed by experts that the global chemical industry has been doing well, with its Indian counterparts performing even better, yielding high total returns to shareholders (TRS) despite recent headwinds. A major investment of Rs 8 lakh crore is also anticipated in the sector by 2025, aiming to bolster its growth further.

In July 2021, production volumes of key chemicals stood at 909,310 MT. Today, despite numerous challenges, namely, inflation, geopolitical concerns, and supply chain disruptions, the sector continues to deliver great value to its stakeholders. Also, India's proximity to the Middle East, the world's largest source of petrochemicals stockpile, enables it to benefit from economies of scale.

Global trends: Uncertainty for the world, possibilities for India : The overall world dynamics have encouraged major multinational companies to turn their sights towards downstream chemical opportunities, thus leading to an increase in the focus on petrochemicals and specialty chemicals in India to boost self-sufficiency. Exhibiting great awareness, several companies have embedded sustainability as the centerpiece of their ethos, with major global investors and analysts following suit. In such circumstances, it becomes imperative for chemical companies to prioritize environmental sustainability to protect long-term shareholder values while continuing to adhere to local regulations.

In recent years, safety and environmental issues have plagued chemical companies extensively, forcing regulatory authorities in countries such as China to crack down on erring companies that are compromising on quality and safety. This has triggered supply chain issues

for multinational buyers of their products. To de-risk reliance on one country, now MNCs are looking at sourcing essential materials from countries like India.

Post-COVID-19, trade conflicts have affected the world, especially the trade relationship between China, the United States, and Western Europe, causing major shifts in global supply chains and affecting bilateral trade between China and the United States; putting other countries' economies at risk of massive repercussions. Large chemical markets that remain accessible in this scenario could present opportunities for Indian chemical companies. Moreover in India, there seems to be a move toward prioritization of core businesses and consolidation for greater scale industrywide, often through big-ticket mergers and acquisitions.

India's role : India consistently ranks third in chemical imports and fourth in exports over the last five years, proving itself as a substantial part of India's inclusive trade flow. In terms of world export, the data indicates the percentage share of exports has increased gradually over time with key factors such as economic growth and social emancipation acting as catalysts that shall boost domestic consumerism and consequently, higher per capita utilization of chemicals (directly or indirectly).

Two major initiatives by the Government, 'Make in India' and 'Atmanirbhar Bharat', are aptly designed for the chemicals & the petrochemicals sector to flourish in the country. The industry needs to build scale via ecosystem – this entails the creation of Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIRs) across all four corners of the country, infrastructure linkages for a hub-and-spoke model and finally, integrating value chains.

India's attractiveness as a manufacturing destination has been rising because of competitive labour costs, its ability to build manufacturing units at less cost than in the developed world, and recent changes to corporate tax rates that have shaped a more supportive ecosystem. Many Indian specialty chemical players have developed distinctive capabilities and established supply relationships with global networks.

Despite industry-specific challenges, chemical companies in India could benefit in the long term from factors such as rising domestic demand in chemical end-use sectors like agriculture, consumer and retail, infrastructure, auto and electronics, and healthcare that could spur around 50 percent of incremental growth in chemicals as the economy grows. All of these factors are expected to drive chemical demand, creating lucrative value pools across most chemical sub segments.

Opportunities:

At a broader level, structural shifts are going to be critical for 'Make in India' to take shape. While 'China+1' is still taking form, India's neighbours and peers have already taken off on a steeper plane. China has in many ways been the world's manufacturing hub over the past two decades while also being a mega-consumer. For instance, industries such as cosmetics, fashion, and FMCG are poised for robust growth, as the pandemic recedes, and spending levels rise. This augurs well for segments such as perfumery cosmetics, essential oils, and products that are linked to the senses, where India has an edge. Also, it would equally aid faster growth of chemicals linked to the packaging of products.

What this brings to the fore, is that it is essential to explore, diversify and build scale by integrating the value chain, and not simply by focusing on a single segment of the industry. 'Atmanirbhar' can succeed, only when the industry builds capabilities across the value chain. This shall reduce dependence on imports, deleverage risks emanating from supply chain disruptions, and more importantly boost the economy. As the government shifts focus on industries such as electronics & semiconductors, renewable energy, and pharma, the role of the chemicals & petrochemicals industry shall evolve into a more specialized one. Eventually, it shall emerge as a stepping stone towards 'making in India, for the world.'

Challenges:

India has a strong vision to be a US\$ 5 trillion digital economy. In order to turn this goal into a reality, the Indian chemical industry has a major role to play. Often the sector faces key challenges such as inadequate infrastructure facilities, high costs of basic raw materials like natural gas and crude oil, high cost of capital, and the need for technological modernization of its facilities. The charter for stabilization has already been prescribed by the government with PLI (Production Linked Incentives) initiatives such as Aatmanirbhar Bharat, Make in India, etc. However, one of the biggest challenges faced as an industry is contracting gross margins due to soaring raw material costs and increasing operating costs due to higher freight, especially owing to the backdrop of the COVID pandemic. Although, there needs to be more focus on manufacturing essential chemical compounds in India.

Looking Beyond China

The global pandemic and its subsequent disruptive impacts have encouraged many companies to de-risk their supply chains. Increased dependence on a single manufacturing source, rising costs in China, growing US-China tensions, stringent environments, and high compliance costs, etc. have created vulnerabilities that have driven firms to diversify supply chains outside of China. India is uniquely positioned to benefit as MNCs increasingly adopt the 'China+1' strategy owing to its competitive cost advantage, focus on quality and sustainability, conducive business environment led by reforms, and incentivized government policies.

Today, the Indian Government allows 100% FDI in chemicals, and has plans for Production Linked Incentive schemes in the Chemicals sector. With this shift from manufacturing out of China, India is already becoming a preferred manufacturing hub for many specialty chemicals segments e.g. agrochemicals and their intermediates (also supported by domestic consumption growth). India has already witnessed modest benefits from the trade diversification with sectors such as textile, specialty chemicals, and electronics that have been tipped to register significant growth. Additionally, the concept of distributed manufacturing systems is increasingly becoming attractive for manufacturers. Moving from a single-country dominant manufacturing set-up to a multi-country operation is being looked upon as a way of mitigating risks associated with global supply chain disruptions and political headwinds. This of course is a business choice more complex than a mere manufacturing set-up as it's a trade-off between a reliable supply chain versus scale benefits. This could be the potential way forward for Indian specialty chemicals players with global aspirations.

The Road Ahead:

A consistent value creator, India's chemical sector remains an attractive hub of opportunities. The sector has created enormous wealth for investors in the past with stocks of many specialty companies rising manifold. Robust demand across end-user industries led by rising domestic consumption, strong export growth, and rising import substitutions are expected to be primary growth drivers for the chemical sector. Growing strong domestic demand and increased exports will continue to fuel the growth of the Indian specialty chemicals industry. The robust performance of the sector is prompting specialty chemical manufacturers to ramp up their production capacity to meet the growing demand for its products. Furthermore, anti-pollution measures in China will also create opportunities for the Indian chemical industry in specific segments.

Additional support, in terms of fiscal incentives, such as tax breaks and special incentives through PCPIRs or SEZs is set to encourage downstream units that will enhance the production and development of the industry. The dedicated integrated manufacturing hubs under the Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIR) policy would also attract an estimated investment of Rs. 20 lakh crore (US\$ 276.46 billion) by 2035.

To sum it all up, the fast paced growth of the Indian Chemical industry is inevitable and its growth trajectory will witness a transition to specialty materials as user industries constantly evolve. The specialty chemicals sector is reshaping the future of India's economic landscape with a renewed approach towards its products and solutions, and if India's demands and megatrends come to fruition, the specialty chemicals industry will need to further gear up, and maybe faster than we would imagine.

Source: Times of India



GOOD GROWTH POTENTIAL FOR INDIAN CHEMICAL INDUSTRY

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KEN RESEARCH

India has seen impressive growth in chemical exports, largely due to specialty chemicals market which has doubled in terms of market penetration. Also, strong tailwinds in exports due to a shift in the global supply chain driven by the China+1 policy of vendors and demand recovery in domestic end-user segments helped the growth.

Exports of chemicals from India have seen a growth of 106 percent in 2021-22. In comparison to 2013-14, when India's chemical exports were US\$ 14 billion, the country has now reached a new high of US\$ 29 billion in 2021-22. The increase in shipments of organic, inorganic, agrochemical, dyes and dye intermediates, and specialty chemicals have contributed to the expansion in chemical exports. India leads in dye production worldwide and exports 16 percent to 18 percent of all dyestuffs. It is exported to over 90 plus countries. India is also said to be the fourth largest producer of agrochemicals in the world and it also manufactures more than 50 percent technical-grade pesticides.

This export boom has been accomplished despite logistical difficulties including high freight costs, lack of containers, etc. Small and medium exporters from Gujarat, Maharashtra, Karnataka, Tamil Nadu, and Andhra Pradesh have benefited from an increase in exports of chemical products. Through the introduction of new compounds, technological advancements, product profile changes, and improvements in quality, the industry has evolved over time to become a modern chemical industry that is prepared to compete on a global scale. India has wide potential for significant growth as global companies are willing to de-risk their supply chains which are dependent on China.

End-use Sectors Driving Growth

According to Ken Research, the Indian chemical industry accounted for \$178 billion in 2019 and is expected to reach \$300 billion by 2025 registering a CAGR of 9.3 percent. The increased demand for chemicals is expected to expand by 9% per annum by 2025. The development of the Indian chemical

market witnessed an increase in demand from end-user industries like food processing, personal care, and home care.

India's proximity with the Middle East helps it in benefitting from economies of scale as they have abundant petrochemical feedstock. Bhagwant Khuba, the Union Minister of State for Chemicals & Fertilizers stated that the chemicals and petrochemicals sector is growing steadily and will play a significant role in achieving India's aim of reaching the target of a \$5 trillion economy. Department of Chemicals and Petrochemicals plans to introduce Production Linked Incentives (PLI) for the sector as India strives to become an epicenter for chemical and petrochemical manufacture on a global scale.

The chemical and petro-chemical sector is expanding as a result of the PLI cheme in important end-use industries. India has a significant need for chemical and petrochemical products, which finds applications in many important end-use sectors like pharmaceuticals, telecommunication and networking equipment, automobiles, electronics, mobiles, medical devices, and textiles. The government is also promoting these segments through PLI schemes with an incentive outlay of USD 25 billion.

This will increase the nation's need for chemicals and petrochemicals. Large-scale investment will be drawn to the sector as a result of the sector's phenomenal demand growth and the simplification of customs duties. This additional manufacturing will significantly assist the entire chemical value chain.

There will be visible growth from the originating point to the ending point. Without a question, one of the main forces shaping our future will be digital technology. Today's chemical companies are exploring technologies that drive efficiency, quality, and cost function, which clearly indicates that the latest technologies can be introduced in the domestic market by joint ventures, mergers, and acquisitions in the coming years.

Source: chemindigest.com



RECYCLING CARBON: CREATING NEW SUPPLY CHAINS FOR CHEMICALS

PREETI JAIN

Abstract : Carbon neutrality across industries globally is the imperative today to address climate change. In this direction, recent COP27 deliberations once again underlined the necessity to mitigate emissions from carbon intensive sectors including chemicals. The chemical industry is one of the largest consumers of fossil fuels; and can play an important role in the energy transition with the aid of innovative technologies to ensure carbon neutral growth.

To achieve these ambitious climate goals, we need a systems-level solution drawing multiple sources of waste carbon and producing sustainable fuels & chemicals; today made from fossil carbon. A transition from oil refining to “carbon refining” is an opportunity for distributed sustainable production and industrial rebirth.

Carbon refineries can harness available high-volume, low-cost, carbon-rich resources like agricultural residues, landfill waste and industrial emissions to produce sustainable ethanol that could be sufficient to entirely displace many products made today from oil refining. LanzaTech; a leader in carbon capture and transformation is already working to make this vision a reality.

Globally, nations are developing strategies to replace chemical products with low carbon alternatives, this offers a tremendous opportunity to create new supply chains for renewable chemicals. Ethanol from waste carbon can be converted to ethylene (a key chemical building block) and further transformed into polymers, surfactants or polyester fiber. This creates a closed loop, circular carbon economy where carbon is reused rather than emitted and waste carbon is a valuable, sustainable raw material to make the things we use in our daily lives.

A vision at scale, the article will cover LanzaTech’s Commercial journey; CarbonSmart™ consumer products and a way to enable a just energy transition. The UN Climate Change Conference (COP27) in Sharm el-Sheikh, Egypt, concluded with optimism as nations joined hands to support developing economies for ‘loss and damage’ caused by climate catastrophes. An incremental win from COP21, the developing economies will need more of such commitments to address climate challenges and accomplish the Just Energy Transition.’

The UN Climate Change Conference (COP27) in Sharm el-Sheikh, Egypt, concluded with optimism as nations joined hands to support developing economies for ‘loss and damage’ caused by climate catastrophe. An incremental win from COP21, the developing economies will need more of such commitments to address climate challenges and accomplish the ‘Just Energy Transition.’

According to IEA, despite all the interventions we are seeing today, the fossil carbon share will still stay above 60% by 2050 (from 80% today) in the energy mix^[1]. What is more alarming, this translates to just a 13% annual CO2 reduction by 2050, not enough to address climate change. With our focus always glued on the energy sector, chemicals, a significant consumer of fossil carbon, are often neglected in the climate debates.

Chemical production accounts for 12% of global oil demand^[2] and is expected to increase significantly to meet rising polymers, material & fertilizers consumption. The chemical industry consumes about 50% of fossil carbon input as raw material or feedstock^[3]. This, in turn, contributes to more than 900 MT of CO2 emissions annually just from the direct production of chemicals. The industry with a 14% share of CO2 emission within the industry segment is classified as a carbon-intensive industry, thus requiring robust decarbonization efforts.

With our daily lives revolving around fossil carbon-derived fuels and products, it’s time we realize the detrimental impacts of continued fossil fuel use, especially on the environment and people. To achieve our Net-Zero objectives and overcome climate despair, a large-scale, robust, rapid, and sustained effort must be made to re-tool our entire carbon economy.

Decarbonization is a requisite for the industry to attain carbon neutrality. The transition toward carbon neutrality will require the energy sector and energy-intensive industries like chemicals to invest in innovative technologies and create new value chains that enable a circular carbon economy where carbon is reused rather than wasted.

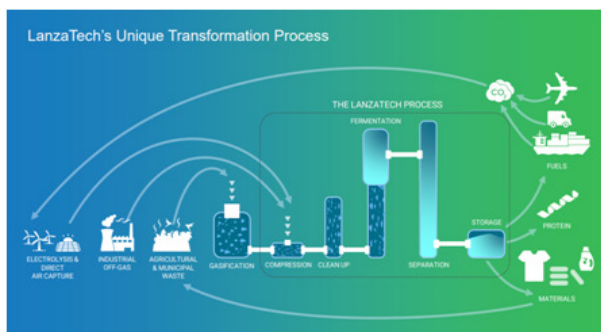
Directly recycling greenhouse carbon into everyday products through a process of biological gas fermentation is one of the most viable paths for a clean energy and sustainable materials future. Making low-carbon fuel (ethanol) and chemicals from waste carbon,

such as industrial off-gases, agricultural residues, and municipal waste, to displace products made from petroleum is critical to overcoming the challenge of decarbonizing carbon-intensive industries.

The inherent flexibility of a biological process, like gas fermentation, allows a variety of waste streams to be readily available without adversely affecting food or land security. CO₂, with the aid of Green H₂ can further amplify this waste carbon feedstocks pool and be a game changer for energy security and GHG mitigation. Ethanol produced from waste has substantial emissions savings compared to fossil fuels and is competitive with plant-based ethanol without impacting land use or biodiversity. Carbon transformation technologies hold opportunities that can be applied across economic sectors, such as agriculture, industry, and waste management, as an essential strategy to reduce greenhouse gas (GHG) emissions and meet the nation's energy, economic and environmental objectives.

The technology already exists at scale and is producing results with over 120 million liters of ethanol produced from steel mill emissions since 2018.

The world's first refinery off-gas-to-sustainable ethanol plant in India is expected to come online by the end of 2022. Additional projects are also underway with other leading stakeholders in India to use agricultural residues for sustainable ethanol production.



Harnessing these multiple waste resources can produce more than 30 billion litres per year of sustainable ethanol that can help India to diversify its energy basket, produce SAF & chemicals, and harness domestic resources to address climate risks. Globally a market opportunity of over USD1.0 trillion, this innovative pathway can unleash investment in a sustainable supply-chain solution that will allow customers to meet sustainability goals and decarbonization mandates across the globe.

Globally, countries, including India, are developing strategies to decarbonize the chemical industry and replace petrochemical products with low-carbon alternatives. For the energy-intensive chemical industry, decarbonization of the primary chemical segment is often looked at as low-hanging fruit towards

decarbonization, as it contributes to 65% of energy consumption in the chemical and petrochemical sectors. For example, ethylene, a building block for other chemicals, requires[4] around 20 EJ worth of energy carrier feedstocks annually. To put this in context, the world's primary energy supply[5] is more than 600 EJ where crude oil and natural gas hold 34% and 23% share of supplies, respectively.

With limited decarbonization options, the chemical industry needs faster diffusion of innovative technologies, new feedstocks, and decentralized models built on the foundation of a circular economy.

Manufacturers, major brands, and consumers desire sustainable product. Gas fermentation technology enables this by utilizing waste carbon to make the building block, ethanol. This can be further transformed into biopolymers, surfactants, or polyester fiber and used by consumer brands to make packaging, perfume, detergent, and household product cleaners.

Estimates show that these products reduce greenhouse gas emissions by over 70% compared to equivalent products derived from virgin fossil resources. This is critical when economies, including India, contemplate their low carbon growth trajectory and how to meet the increased demand for petrochemical products.

It is time to question where our carbon comes from. We should all take steps to launch a new Carbon Economy in India. As business leaders, we can use carbon transformation to rethink how we procure, use and dispose of carbon. And as consumers, we can choose where our carbon comes from.

In the quest for innovative technologies, we must ensure they benefit rural communities and traditional manufacturing centers. A new circular carbon model that includes waste carbon from wastes such as agricultural residues will support a more sustainable, equitable, and resilient economy.

To heal and repair the world takes time. And with innovation, strong partnerships, and the support of government leaders, we are ready to make the transition and celebrate a post-pollution future.

[1] IEA World Energy Outlook 2022

[2] <https://www.iea.org/reports/the-future-of-petrochemicals>

[3] <https://www.iea.org/fuels-and-technologies/chemicals>

[4] McKinsey Decarbonization of industrial sectors: the next frontier Report

[5] <https://unstats.un.org/unsd/energystats/pubs/documents/2022pb-web.pdf>

Source: chemindigest.com

TRENDS THAT WILL AFFECT THE CHEMICAL INDUSTRY IN 2023

The chemical industry is a large and diverse sector that produces a wide range of products, including fuels, plastics, chemicals, and pharmaceuticals. Agriculture, construction, transportation, healthcare, and consumer goods are just a few of the sectors that use these materials.

Additionally, it involves a number of methods, including manufacturing, distribution, and research and development. In addition, it relies on raw materials, including fossil fuels and natural resources, as well as advanced technologies and techniques to transform these materials into useful products.

chemical industry plays a significant role in the global economy and is a major contributor to the production of goods and services. It is a large employer and is well-known around the world. It is a very competitive market, and businesses are constantly working to create cutting-edge new items and procedures.

The chemical industry, including primary, specialty, and consumer products, produces many different types of chemicals.

Basic chemicals are used as raw materials for other industries, while specialty chemicals are used in a wide range of applications and often require more advanced production processes. Consumer products include items such as personal care products, household cleaning products, and food additives..

The chemical industry is also subject to various regulations and guidelines to ensure its products and processes' safety and environmental sustainability..

Here are a few trends that could affect the future of the Chemical Industry:

1) Sustainability and environmental concerns

There is increasing pressure on industries, including the chemical industry, to reduce their environmental impact. This could lead to the developing and adoption of more sustainable practices and technologies, such as renewable energy, resource

conservation, and waste reduction

2) Digitalization and automation

The chemical industry will likely continue adopting digital technologies and automation to improve efficiency, reduce costs, and increase productivity. This could include the use of sensors, data analytics, machine learning, and robotics in various processes.

3) Increasing demand for specialty chemicals

The demand for specialty chemicals, which are used in a variety of industries, including pharmaceuticals, personal care, and **electronics**, is expected to continue growing. This could lead to increased research and development efforts to meet this demand.

4) Changes in global trade and economic conditions

Changes in global trade and economic conditions can significantly impact the chemical industry, as it is a worldwide industry with complex supply chains. In addition, factors such as changes in regulations, tariffs, and currency exchange rates could affect the industry.

5) The shift towards renewable and bio based chemicals

There is growing interest in developing and producing chemicals from renewable or bio based feedstocks, such as plant-based materials, rather than fossil fuels. This trend could be driven by concerns about resource constraints and environmental change, as well as the potential for cost savings and new market opportunities.

It's important to note that these are just a few examples of potential trends, and their impact on the chemical industry could vary. As a result, it is difficult to predict precisely how the industry will evolve in the future.

Source: meghachem.org

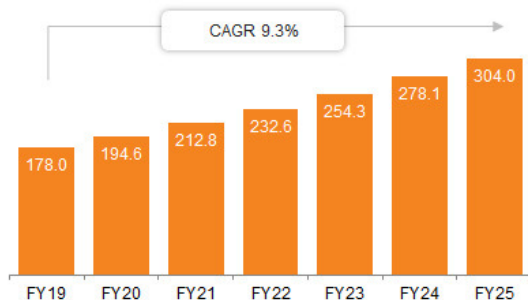


WHICH CHEMICALS ARE IN DEMAND IN INDIA?

AJJAY KUMAR GUPTA

NIIR PROJECT CONSULTANCY SERVICES (NPCS)

Chemical industry market size (US\$ billion)



The chemical industry in India is a highly diverse sector that produces a wide range of chemicals, including petrochemicals, agrochemicals, fertilisers, polymers, and basic and speciality chemicals. Over the next five years, there will be a 9% increase in the nation's overall need for chemicals. Here are a few of the compounds that are in high demand in the nation:

Polymers : Because more people are using plastic products, which frequently contain polymers, there is a rising need for polymers in the nation. A further element driving the demand for polymers is increased urbanisation. During the FY 2019–23, the demand for polymers is anticipated to increase at a CAGR of 8%.

Particular Chemicals : More than other chemical industries, the demand for speciality chemicals is anticipated to skyrocket.

Demand has grown as a result of technological advancements that have created new specialised end-use applications. During the fiscal years 2019 to 22, the demand for specialty chemicals is anticipated to increase at a 12 percent CAGR.

Natural Chemicals : Across the globe, including India, the demand for green and environmentally friendly products is rising quickly. Both consumer (eco-cosmetics, eco-food components and additives, bio-plastics, etc.) and industrial segments exhibit a demand for these chemicals (eco-insecticides, eco-pesticides, bio-fertilizers, etc.)

Pharmaceuticals : As global health concerns spread, there is a rising demand for pharmaceutical compounds.

Pharmaceutical chemicals are the starting point for producing pharmaceutical goods like pills, ointments, capsules, and more.

Given India's low manufacturing costs and the high demand for these chemicals around the world, there is a lot of potential for their export.

If you are a business owner wishing to start a chemicals manufacturing company or an established enterprise having difficulties, please register at SolutionBuggy. We have successfully completed more than 300+ chemical industry consulting projects to date.

Impact of Chemical Demand on India: Chemicals are currently playing a crucial role in several sectors of the Indian economy. These chemicals have been used for a wide range of uses, from manufacturing to research and development. In 2017, the chemical industry contributed to around 4% of India's Gross Domestic Product (GDP). It is also estimated that chemicals contributed nearly 8% to the country's export earnings and created more than 1 million jobs. Several new projects are underway or planned in the near future.

The chemicals and petrochemical sector in India is an important anchor for the manufacturing sector. The Indian chemical industry accounts for one-third of global exports, 50% of India's total exports and 2% of world export revenues. It is a major driver of economic activity and a key component in the country's export basket.

In 2021, India produced 23.98 million metric tons of chemicals and export earnings were \$7.1 billion; 60% of these exports were to European Union (EU), Japan and SAARC countries. In 2016, chemical exports from India were 22% of the global value at \$36 billion as compared to 72% from China.

Chemical Trade with India : India ranks fifth in the world in chemical demand. The country is the second largest consumer of chemicals. In 2020, India was the second-largest consumer of caustic soda in Asia and seventh in the world. The most consumed chemical in India is Soda ash (40%) followed by Caustic Soda (38%) and Hydrochloric Acid (12%), according to the World trade report.

India imports petrochemicals, pharmaceuticals, plastics and pesticides from major global markets such as China, Japan and EU countries.

Trends in Chemical Industry Production : Alkali chemicals enjoy the biggest production contribution in the chemical sector of India. Alkali chemicals have made up around 70% of the overall production over the years FY02–FY09, with organic chemicals making up about 20%. On the other hand, the output of dyes and dyestuffs has been continuously rising since FY04 due to their growing importance in industries including textiles, leather, plastics, and foodstuffs, while the share of dyes and dyestuffs and pesticides both remain incredibly low. However, the rate of increase in the manufacturing of organic compounds has been incredibly slow.

Inorganic chemical production increased continuously from FY03 to FY09 compared to alkali and organic chemical production increases, which caused this segment to develop at a CAGR that was somewhat healthier than the industry as a whole.

- Since FY03, soda ash has had the biggest share of the entire production of alkali chemicals. However, since FY08, caustic soda production has been outpacing soda ash production; its contribution rose to 38% in FY09 from 29% in FY04.
- Since FY04, carbon black has contributed more than 70% of the overall production in the organic chemicals segment, while out of the 19 products in the inorganic chemicals segment, methanol, acetic acid, and acetaldehyde account for more than 50% of the total output.

The Indian chemical industry's international trade is dominated by imports.

Chemical imports account for the majority of all significant chemical trade; since FY03, imports have made up about 68% of the overall volume of global trade. Around 3.4 MMT of main chemicals were exported by the chemical sector during FY08, while 7.4 MMT were imported. China and Saudi Arabia, as well as China and Africa, are the biggest importing and exporting nations, respectively. Due to the alluring incentives offered to Chinese chemical makers, their products are significantly less expensive on international markets and pose a serious threat to Indian chemical players. Organic chemicals dominated imports from FY03 to FY08 and made up an average of almost 57% of the overall volume of imports.

Due to strong local demand from end-user industries including the plastic and petrochemical industries, which have been seeing significant expansion over the past few years, organic chemicals

accounted for almost 60% of all imports in FY08 at 1.2 MMT. However, due to outdated technologies, local players have been unable to match the rising domestic demand. As a result, despite the capacity for organic chemicals being added since FY04, production levels of organic chemicals have stagnated.

How to start a chemical manufacturing industry?

Here is an easy 4-step process to begin your own small-scale chemical business for those who frequently question how chemical manufacturing business plans can be launched:

1. Make a business plan first.

Based on market research and industry data, a business plan outlines the objectives, ambitions, and core values of a chemical company.

2. Watch out for the opposition.

Prior to starting a chemical firm, it is crucial to be aware of the local rivals. Understanding the competitors' advantages and disadvantages is necessary to know how to outperform them.

3. Consult an authority like NIIR

High risks are associated with the chemical manufacturing process and its enterprises, but these risks can be reduced with the help of industry insights from seasoned businesspeople who are willing to mentor start-up businesspeople as long as they are not their direct competitors.

We, at NPCS, endeavor to make business selection a simple and convenient step for any entrepreneur/startup. Our expert team, by capitalizing on its dexterity and decade's long experience in the field, has created a list of profitable ventures for entrepreneurs who wish to diversify or venture. The list so mentioned is updated regularly to give you a regular dose of new emerging opportunities.

4. Select the path

Aspiring business owners have two options: they can either start their own company from scratch or purchase an established company. A startup gives someone the opportunity to create something based on their leadership style and objectives. However, due to its risky nature, financing the firm would be challenging. A lucrative business that has been purchased, however, has less uncertainty. If you have a great project report for a bank loan, it is simpler to secure investments and loans when it comes to funding.

Source: www.linkedin.com



KEY CHALLENGES AND GROWTH OF CHEMICAL INDUSTRIES IN INDIA

**MR RAVI GOENKA,
IMMEDIATE PAST PRESIDENT, ICC & CHAIRMAN & MANAGING DIRECTOR
LAXMI ORGANICS INDUSTRIES LIMITED**

Mr Ravi Goenka, the **IMMEDIATE PAST PRESIDENT, ICC & CHAIRMAN & MANAGING DIRECTOR, LAXMI ORGANICS INDUSTRIES LIMITED** is a Chemical Engineer and the Founder of **Laxmi Organic Industries Limited**, having rich experience of more than 30 years in establishing and operating Chemical Factories.

Mr Goenka shares about his insights on Indian Chemical industry growth, the challenges, Covid-19 impact on the industry and so on, in an interview with **CHEMICAL NEWS.**

The Indian chemical industry appears to be in a strong position compared to most other sectors of the economy. What would you attribute this to?

Indian Chemical Industry is witnessing brilliant growth opportunities. Tailwinds such as rising disposable income, volatility in supply chain, urbanization, shift in consumer preferences to healthier and environment-friendly options and China plus one is fuelling this growth momentum. The contribution of Chemical and Petrochemical Industry to the Indian Manufacturing GDP is quite significant. The industry is valued presently at 220 billion USD and is growing rapidly. India's overall chemicals market is estimated to be \$ 300 Bn by 2025 and \$850-1000 Bn by 2040 accounting for ~5% of India 2040 GDP (nominal) and 10-12% of world chemicals market in 2040.

What are some of the key challenges faced by the Indian chemical industry today?

Some of the Key challenges to the Chemical Industry are 1. Inadequate Infrastructure: Non-Availability of Chemical Parks in the Plug & Play Model, Chemical Zones with ready land availability, with access to Ports 2. Multiple approvals, delayed clearances. 3. Need for favourable FTAs to facilitate exports 4. Inadequate Feed Stock Availability to provide the required building blocks and 5. Incentives such as PLI to incentivise and create a fully self-reliant India.

How did Covid-19 impact the chemical industry in general?

The times of Covid-19 were challenging and tough for most industries. The chemical industry in this respect had borne the brunt of this pandemic too. While we know that change is the only constant, however, adapting to it is no mean task. As we were recovering, the second wave created havoc with lockdowns and restrictions. Again, everything came to a standstill.

Nonetheless, we as an integral core industry supporting other allied industries kept marching on with guts and gumption. Now we are better prepared. Vaccinations and Covid appropriate behaviour and protocols have become second nature to us. As we look cautiously into a post covid era, we face a new set of challenges and opportunities. As in the past, the capital markets have rewarded the chemicals industry for its resilience and ability to drive growth amidst uncertainty. The pandemic disrupted the global supply chains and accentuated the sourcing further away from the world's largest manufacturing hub, i.e., China. The shutdowns prompted global companies to rethink sourcing strategies of relying heavily on a single nation. I am very glad to mention that India is emerging as an important alternative to China for many developed nations and Global companies.

What are some of the major measures taken by ICC during the last two years?

Despite Pandemic, the last two years were very important for Indian Chemical Council, in view of various key initiatives undertaken by ICC.

ICC became a full member of International Council of Chemical Associations (ICCA) whose members account for more than 90 percent of Global Chemical Sales. ICC now represents ICCA at the ICCA Board. In addition to this, member companies and association staff have found place in the ICCA Leadership Groups

and Task Forces.

ICC had taken up with Government of India ('GoI'), requesting the Department of Chemicals & Petrochemicals ('DCPC') to include Production Linked Incentive Scheme ('PLI') and granting Remission of Duties and Taxes on Exported Products ('RoDTEP') rates for the Chemical Sector. I am very glad to note that RoDTEP has been granted for chapters 28 & 29 and that DCPC is taking steps to introduce PLI to Chemical Sector.

ICC had also strongly taken up with the Department of Chemicals & Petrochemicals, the serious challenges faced by the Chemical industry whenever incidents involving safety, health, and environment takes place.

Under the guidance of Secretary, Department of Chemicals & Petrochemicals, ICC is entrusted with important projects such as Perspective Plan 2040 for Chemical Industry; Developing Training Courses on Safety and Environment for MSME units in the Chemical Sector etc. ICC has completed the projects and submitted to the Government.

You will be happy to know that during the last two years, although the Pandemic had affected our daily lives, ICC had shown high enthusiasm in conducting all the events virtually without any interruption. The flagship events of ICC namely The Chemical Industry Outlook Conference, Sustainability Conclave and the Seminar Recognising Excellence in various facets of chemical Industry were successfully organised with high level participation from Government and Industry attracting large number of delegates. Under the aegis of T&E Expert Committee, ICC had initiated a Series of Webinars on important topics such as Hydrogen Economy, Carbon Capture and Utilization, ESG and many more which were very well appreciated by the participants. The Basic Course on Chemical Laboratory Safety Practices was curated by ICC under the aegis of R&D Subcommittee which had an overwhelming response.

ICC's objectives evolve around Sustainability and there were many activities initiated by Responsible Care (RC) and Nicer Globe groups during this year. Responsible Care group conducted various training programs, conferences for the members of the Chemical industry throughout the year. An Awareness program on GHS was also conducted for the Government Officials. A successful event of Nicer Globe – NG LogNext 2022 was conducted under the

Nicer Globe vertical.

ICC in association with the National Authority, Chemical Weapons Convention, Cabinet Secretariat, Government of India had organised a number of Webinars on Chemical Weapons Convention (CWC) in these two years. ICC continued to share Articles, Latest news, Economic reviews, various activities & developments in Chemical Industry through its monthly magazine, Chemical News which has become very popular in the industry. Indian Chemical Industry is at an inflection point and is bound to grow further in an accelerated manner and Indian Chemical Council (ICC) will continue to play a very important role for the development of the industry and the Indian Economy.

Where do you see the Indian chemical industry by the end of this decade? What sectors are likely to grow most?

The fast-paced growth of the Indian Chemical industry is inevitable and its growth trajectory will witness a transition to specialty materials as user industries constantly evolve. The specialty chemicals sector is reshaping the future of India's economic landscape with a renewed approach towards its products and solutions, and if India's demands and megatrends come to fruition, the specialty chemicals industry will need to further gear up, and maybe faster than we would imagine.

India's speciality chemicals sector appears upbeat about its prospects, as companies aim to expand capacity to capitalize on growth opportunities. The capital spending plans of many companies in the speciality segment suggest they are positioning themselves to tap robust growth opportunities. China's prioritization of capacity rationalization, environmental protection, and reducing its carbon footprint are likely to inhibit the growth of the chemical industry in that country. The Indian chemicals sector, on the other hand, has continued to develop its capabilities over the past decade and is now well-positioned to serve overseas markets.

I am confident that the Chemical Industry will contribute more significantly to the Indian GDP and help our Prime Minister's vision of "Make in India" and "Atmanirbhar Bharat" a reality.



TOP 8 CHEMICALS TRENDS & INNOVATIONS IN 2023

Are you curious about which chemicals trends & startups will soon impact your business? Explore our in-depth industry research on 1 216 startups & scaleups and get data-driven insights into technology-based solutions in our Chemicals Innovation Map!

Advancements in the chemical industry primarily focus on digitalization, decarbonization, and automation. Startups integrate different technologies to automate chemical manufacturing and make it sustainable. The internet of things (IoT) further promotes high connectivity between various devices to improve material quality, asset performance, and worker safety. Also, real-time analytics and AI generate valuable information to optimize production processes. Cloud computing and predictive analytics accelerate research and development (R&D), especially the discovery of new materials and chemical formulations. At the same time, large-scale digitization and network connectivity cause significant cyber threats. Therefore, the chemical industry focuses on blockchain algorithms to secure data and supply chains. Innovation through these chemicals trends highlights the direction the industry will move in over the next few years.

Innovation Map outlines the Top 8 Chemicals Trends & 16 Promising Startups

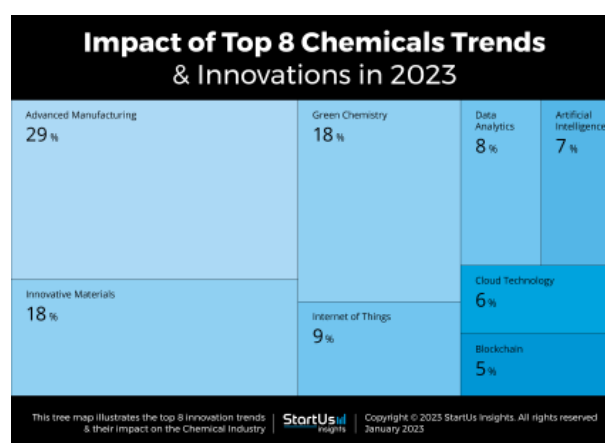
For this in-depth research on the Top 8 Chemicals Trends & Startups, we analyzed a sample of 1 216 global startups and scaleups. The result of this research is data-driven innovation intelligence that improves strategic decision-making by giving you an overview of emerging technologies & startups in the chemicals industry. These insights are derived by working with our Big Data & Artificial Intelligence-powered **StartUs Insights Discovery Platform**, covering 2 500 000+ startups & scaleups globally. As the world's largest resource for data on emerging companies, the SaaS platform enables you to identify relevant startups, emerging technologies & future industry trends quickly & exhaustively.

In the Innovation Map below, you get an overview of the Top 8 Chemicals Trends & Innovations that impact companies worldwide. Moreover, the Chemicals Innovation Map reveals 16 hand-picked startups, all

working on emerging technologies that advance their field.

Tree Map reveals the Impact of the Top 8 Chemicals Trends

Based on the Chemicals Innovation Map, The Tree Map below illustrates the impact of the Top 8 Chemicals Trends in 2023. Innovation in IoT, AI, cloud computing, and data analytics drive the digitalization of the chemical industry. The most prevailing trend is Advanced Manufacturing, which includes technological advancements from immersive reality and robotics to digital twins. Innovative materials form another significant trend, with developments spanning biochemistry and nanotechnology. Further, sustainable and green initiatives encourage the shift toward recycling and waste-to-energy solutions. Lastly, high cyber vulnerability calls for blockchain-based protection measures, which bring traceability and transparency to supply chains.



Global Startup Heat Map covers 1 216 Chemicals Startups & Scaleups : The Global Startup Heat Map below highlights the global distribution of the 1 216 exemplary startups & scaleups that we analyzed for this research. Created through the StartUs Insights Discovery Platform, the Heat Map reveals high startup activity in Europe and North America, followed by India.

Below, you get to meet 16 out of these 1 216 promising startups & scaleups as well as the solutions they develop. These chemicals industry startups are hand-picked based on criteria such as founding year, location, funding raised, and more. Depending on your specific needs, your top picks might look entirely different.

Top 8 Chemicals Trends & Innovation Areas

1. Advanced Manufacturing : Advancements in chemical manufacturing increasingly involve additive technologies, digitalization, and automation. Extended reality helps chemical engineers resolve workforce shortages and employee training. Together with digital twins, it simulates crisis production scenarios and diagnoses issues remotely. 3D printing also automates electrochemical device fabrication, digital synthesis, and novel materials development. Further, cobots aid plant technicians in hazardous laboratory environments to speed up the production rate. Automated guided vehicles transport goods without human intervention. All these advancements make new chemical manufacturing innovations one of the top chemical industry trends.

Trillium Renewable Chemicals enables Green Manufacturing : US-based startup **Trillium Renewable Chemicals** manufactures plant-based acrylonitrile from sustainable feedstocks. Acrylonitrile is conventionally made from petroleum-based feedstock that emits enormous heat and produces poisonous cyanide. The startup's patented technology replaces fossil raw materials with bio-renewable feedstocks. It involves thermochemical catalysis that does not need biology. The approach avoids the long-distance transportation of hazardous products, in addition to being cost-effective, health risk-free, and scalable.

Tree-Tower facilitates Smart Chemical Manufacturing : **Tree-Tower** is an Italian startup that develops innovative customized software for smart chemical manufacturing. The startup's portfolio includes computer-aided engineering, machine learning, and digital twin solutions. It also offers sensor networks and big-data analytics. These technologies activate rapid prototyping, virtual testing of materials and components, as well as product design optimization. Moreover, Tree-Tower provides tools for additive manufacturing and advanced VR visualization as well. True Tower also ensures intellectual property (IP) protection using corporate software strategies.

2. Innovative Materials : The new and emerging innovative materials form trends around advanced battery materials, nanomaterials, and biotechnology.

Biotech solutions overcome the negative effect of petrochemicals by producing bio-based batteries. Such advanced cathode materials increase batteries' energy density and efficiency. Another example is carbon fiber which extends the lifespan of blades in wind turbines. Also, nanotechnology investigates undiscovered materials such as polymers to improve smoothness and heat resistance for coatings. The chemicals industry benefits from new materials by reducing its carbon footprint and optimizing costs.

Polymerize predicts Material Properties : Singapore-based startup **Polymerize** utilizes ML models to forecast material properties before experiments. The platform provides insights on chemical formulations and data visualization. Thus, it improves decision-making for polymer businesses and accelerates R&D operations by adjusting the experiment's structure and timeline. In this way, Polymerize enables products to reach the market faster.

NCTech develops Nanocellulose Materials : **NCTech** is an Egypt-based startup that produces nanocellulose materials from agricultural waste. NCTech develops nanocellulose with properties such as low density, high strength, and large surface area. These properties deliver better performance for aqueous gels. Also, the startup replaces the use of synthetic raw materials. This way, NCTech's products are sustainable and suitable for the cosmetics, biomedical products, wood adhesives, and paper products industries.

3. Green Chemistry : Green chemistry focuses on processes and products that stop the impact of dangerous or hazardous chemicals and materials. This chemicals trend pushes manufacturers to prioritize environmental regulations and sustainability. Producers install recycling technologies, enhance waste management, and move to alternative energy resources. For example, the transition from petroleum to plant-based feedstocks converts biomass into fuel. Another example is green hydrogen which transforms carbon dioxide (CO₂) emissions into hydrocarbons. Further, green chemistry solutions substitute coke oven gas to decarbonize the steelmaking process.

Lignolix develops Lignin Upcycling Technology : **Lignolix** is a US-based startup that upcycles lignin from plant waste into high-performance specialty chemicals. Since lignin is difficult to process due to its smell, the startup's technology breaks down lignin into small pieces while preserving its functional properties. This approach reduces odor and color challenges and is also compatible with other products. The end products are applicable in cosmetics, adhesives, flavorings, and

fragrances and the Lignolix technology is easily scalable.

SusPhos offers Phosphate Waste Upcycling : SusPhos is a startup from Denmark that applies smart chemistry to upgrade phosphate-rich waste. The startup generates waste-free alternatives to products derived from fossils. SusPhos's patented technologies provide sustainable phosphate products such as high-quality flame retardants and specialty fertilizers.

4. Internet of Things : The chemical industry implements IoT to capture and store operational data, as well as streamline processes. IoT also facilitates controlling material quality, asset performance, and worker safety. The acquired data simulates and predicts maintenance suggestions to prolong asset lifespan. For instance, operators use sensor measurements to avoid overheating, in turn, preventing unexpected shutdown and production losses. Finally, IoT unites original equipment manufacturers (OEMs), operators, and service providers on a single platform. This brings unprecedented transparency to chemical industry supply chains – making this a top chemicals trend.

Volatile analyzes Flavors using an Electronic Nose : Using AI and smart sensors, UK-based startup **Volatile** identifies flavors. The startup integrates analysis of flavor drivers, chemical composition screeners, and electronic nose devices. Its electronic nose, Scout2, is a metal-oxide gas sensor that detects odors and volatile organic gases. Moreover, Scout2 features a modular design compatible with other major sensor manufacturers. This device controls air quality and monitors the ingredients of solids and liquids and operates irrespective of changing environmental conditions.

MantiSpectra develops a Chip Spectral Sensor : **Mantispectra** develops Near-Infrared (NIR) spectral sensors based on the Indium Phosphide platform. These sensors identify and quantify materials' chemical information encoded at wavelengths. The computation is also completed in a fast, contactless, and non-invasive manner. Usually, traditional spectrometers are expensive and complex to use. Yet, Mantispectra's portable mini sensors solve these challenges whole by fitting neatly into various devices.

5. Data Analytics : Advanced data analytics elevates productivity and profitability in chemical manufacturing. Insights from big data optimize energy consumption, plant operation, and supply chains. Additionally, sensors and wireless devices track the historical performance of manufacturing equipment. Based on this data, AI algorithms forecast the potential

failures and their root causes to decrease machinery downtime. Meanwhile, supply chain analytics reduces costs in each step of manufacturing, from raw materials purchasing to end-user delivery. Moreover, producers can easily analyze weather patterns and predict events that cause a delay in the supply chain. Like in all industries today, the effects of digital operations and analysis significantly impact the chemical industry too.

MQS works on Quantum Chemistry Integration : Danish startup **MQS** combines quantum-based computational tools and thermodynamics modeling to calculate material properties. The startup accelerates R&D processes in the pharma, biotech, and chemical industry. The MQS software applies prediction models and algorithms to discover new materials for batteries and sustainable solvents, as well as new drugs and biodegradable plastics.

agPlenus offers Computational Genomics : Israeli startup **agPlenus** delivers predictive technology to discover novel chemicals for crop protection. The startup's target-based technology uses a virtual screening approach to rapidly compute the analysis of lots of molecular data. agPlenus incorporates genomics, AI, and big data to extend the chemicals library, as well as increase the probability of successful chemical product development.

6. Artificial Intelligence : In the context of the chemicals industry, AI and deep learning algorithms strengthen laboratory experiments and clinical trials. Such solutions generate new biochemical formulations and material combinations. For example, new molecules with healing properties or alternatives for dangerous or hazardous substances. Besides, AI automates chemical processes and collects valuable data to improve operational efficiency. AI solutions also instantly spot anomalies, leakages, or contamination and enable early prevention. These wide-ranging benefits and applications of AI make it a top chemicals trend to follow.

Chemical.AI offers AI-based Synthesis Planning : Chinese startup **Chemical.AI** provides AI and cheminformatics for synthesis planning. The startup's data-driven approach enables fast predictive retrosynthesis. It generates diverse routes and also discovers new ones. The AI-assisted design considers synthetic steps, level of synthetic difficulty, route feasibility, and synthetic strategies. Thus, the human-computer evaluation tool accelerates the R&D of innovative elements in pharmaceuticals.

Navigance delivers AI intelligence to manufacturing: **Navigance** is a German startup that offers an AI-driven

SaaS platform. The platform digitalizes and optimizes chemical manufacturing processes. Navigance collects data from chemical plants and applies rapid cloud computing using AI and advanced analytics to spot anomalous patterns. Based on this data, Navigance sends predictive alerts and automatic recommendations. This improves process efficiency and production output while reducing energy consumption and developmental costs.

7. Cloud Computing : Since enforcing innovations is increasingly time-consuming, cloud computing is rapidly gaining traction. Cloud computing tools perform heavy calculations to find material and chemical compatibility. Also, a cloud-based solution is easily scalable and does not require large capital investments to deploy. Cloud data storage enables information storage and exchange in a flexible, safe, and quick manner. It also reduces operational costs and lowers supply chain risks. Another significant focus for cloud startups is cyber security since the industry works with highly sensitive data that contains information, for example, about chemical formulas.

Nextmol builds a Cloud-based Chemicals Design Lab : **Nextmol** is a Spanish cloud-based molecular modeling startup that utilizes AI to design new chemicals. The startup incorporates atomic-scale models and computational chemistry. It characterizes molecules, simulates hard-to-reach experiment conditions, and predicts the most promising molecules. Additionally, Nextmol identifies the causes of lab failures. To achieve fast and reliable results, the startup also offers high-performance cloud computing.

Fastone offers a Multi-Cloud Computing Platform : **Fastone** is a Chinese startup that develops cloud-based solutions for automotive, life sciences, and smart manufacturing. Based on the serverless and Application Defined Cloud (ADC) framework, Fastone builds a cheap, fast and scalable computing platform. It is used for drug discovery and electronic design automation. The startup's online computer-aided engineering simulation platform further allows HPC modeling on any device. It runs finite element analysis (FEA), computational fluid dynamics (CFD), and thermal analysis. Further, Fastone offers cloud platforms for bioinformatics and exploratory data analysis.

8. Blockchain : From raw materials to manufacturing, blockchain technology tracks chemical products. Moreover, it monitors even individual molecules at every step of the supply chain. Blockchain provides trusted data, an understanding of customer needs, and unexplored revenue models. Besides, it reveals

consumption patterns to optimize demand planning. Thus, it eliminates overstocking, rushed orders, and scheduling challenges. Smart contracts further provide distributed and autonomous control to ensure quality and reduce errors during testing processes.

CircularTree provides a Circular Supply Chain Solution : **CircularTree** is a German startup that creates a circular supply chain. The startup's blockchain-powered ecosystem simplifies supply chain sustainability (CSR) and compliance (ESG) responsibility. The transparent automation of workflows further eliminates the ambiguity between stakeholders. CircularTree makes the process of compliance management trustworthy. Further, its digital twin solution allows manufacturers to coordinate the logistics of chemical materials in real-time.

Chemchain enables Chemicals Tracking : Brazilian startup **Chemchain** develops a SaaS blockchain platform. The platform tracks and transfers information along the chemical value chain. The startup's decentralized approach protects data access to third parties through end-to-end encryption. Its algorithms also document historical information about raw materials, such as the presence of specific chemicals, time delays, extra expenses, and human errors. Chemchain allows customers to control confidential data and disclose it selectively, overcoming secure communication constraints.

Discover all Chemicals Trends, Technologies & Startups : The top 8 Chemical Industry trends stimulate digital transformation and sustainability while optimizing manufacturing processes and discovering new materials. These chemical solutions build a connected and intelligent value chain that improves efficiency, profitability, and transparency across the industry and beyond.

The Top 8 Chemicals Trends & Startups outlined in this report only scratch the surface of trends that we identified during our data-driven innovation and startup scouting process. Among others, novel materials, green chemical solutions, and smart manufacturing techniques and tools will transform the sector as we know it today. Identifying new opportunities and emerging technologies to implement into your business goes a long way in gaining a competitive advantage. Get in touch to easily and exhaustively scout startups, technologies & trends that matter to you!



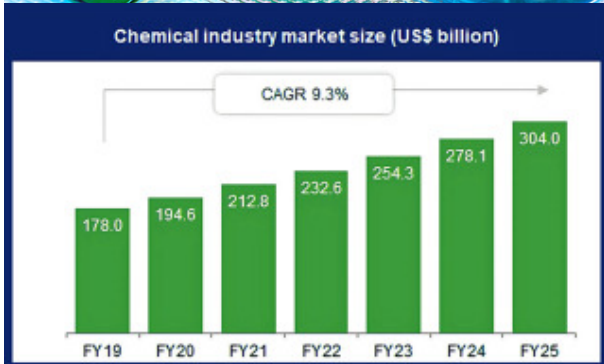
OPPORTUNITIES IN CHEMICAL MANUFACTURING INDUSTRY IN 2023

SOLUTION BUGGY

The chemical manufacturing industry is projected to double its size and reach \$300 billion by 2025, clocking an annual growth rate of more than 10% according to Chemicals export promotion council (Chemexcil). India's chemical manufacturing industry is extremely diversified as it covers more than 80,000 commercial products. Most of the modern manufacturing industries are dependent on chemical industry ranging from soaps to automobiles. As the use of chemicals in our modern life is indispensable, now more than ever, the Indian chemical industry has grown rapidly in the past decade and is set to experience double digit growth. Chemical industry is considered as an important sector to propel the growth of the nation's economy as it has a turnover of \$160 billion growing at 100 basis points faster than India's GDP. Read the complete blog to explore opportunities and to start the chemical manufacturing industry.

chemicals and to reduce imports. India is revisiting its policies for the chemical and petrochemical sector to attract foreign participation. The Indian chemical industry, led by the Indian Chemical Council (ICC), has set a goal of reaching \$300 billion by 2025 which requires an investment of about \$75-100 billion to decrease import dependency and improve chemical products exports. Bimal Gokul Das, additional vice-president of ICC has informed that to meet the Indian chemical industry's raw materials requirements, India requires at least one new cracker every year with an investment of \$1 billion each over the next 10 years to make basic chemicals such as ethylene, butadiene, propylene, and other derivatives required for the petrochemical industry.

Opportunities in The Chemical Manufacturing Industry in India:



Overview of Chemical Manufacturing Industry in India: The Indian chemical industry is growing at more than 10% from the past 10 years. India ranks 14th in chemical products exports and 8th rank in imports. The Indian chemicals and petrochemicals sector is expected to attract an investment worth INR 8 lakh crore. 22% of the total chemicals and petrochemicals market in India is captured by specialty chemicals. Chemicals export promotion council (Chemexcil) chairman Satish Wagh has informed that the government is working on a draft chemical policy to meet the rising demand for



1. AgroChemicals: India is the fourth largest producer of agrochemicals globally and it is expected to reach USD 4.7 billion by 2025. The Agrochemicals market is expected to grow at a CAGR of 8.6% between 2021 and 2025. Agrochemicals are broadly classified into pesticides, insecticides, herbicides, nematicides, fungicides, etc. The landmass available for agriculture is decreasing but demand for food products is increasing which is recognised as the major market driver for the agrochemicals sector. Integrating farming practices is also encouraging the farmers to use different agrochemicals to increase land productivity and maintain soil health. Increased government initiatives to assist farmers and rapid technological advancements are also propelling the growth of the agrochemicals sector.

2. PetroChemicals: Petrochemical contains hydrocarbons produced from processing of crude oil which can be used in a wide array of industries such as plastic, agriculture, automotive, construction, packaging and personal care. The petrochemical market is broadly classified into basic petrochemicals,

intermediates, and other petroleum-based chemicals. Basic petrochemicals holds the largest market share which includes synthetic detergent intermediates, synthetic rubber, polymers, performance plastics and synthetic fibers. Intermediates holds the second largest market share in the petrochemicals segment.



3. Construction Chemicals: The construction chemical industry in India is growing swiftly due to rising construction spending in the country and increasing government investments in infrastructure projects such as Make in India, Housing for All, construction of flyovers, metros etc. Construction chemicals are segmented based on product type such as protective coatings, adhesives, sealants, protective coatings, industrial floorings, concrete admixtures, cement, grinding aids, waterproofing chemicals, etc. The construction chemicals market size stood at USD 43 billion in 2018 and is expected to touch USD 71 billion by 2026 due to increasing population that requires more buildings to reside and work in.

Construction Chemicals



4. Speciality Chemicals: Speciality chemicals constitutes approximately 20% of the total chemicals market in India by value and it is projected to reach USD 64 bn by 2025.



Manufacturers of speciality chemicals can target segments such as agrochemicals, pharmaceuticals, textiles, polymers, etc. India is on the path to double speciality chemicals market share in 5 years as China has been losing its cost-competitiveness and dominance in the market due to increased environmental costs and reduced government sops.

Government Policies to Boost Chemical Manufacturing:

- The government has allocated USD 27 million under the union budget 2022-23 to the department of chemicals and petrochemicals.
- To improve domestic production, reduce imports and attract investments, the government has set up a 2034 vision to propel the growth of the chemicals and petrochemicals sector.
- To encourage production of agrochemicals, the government is planning to implement PLI scheme with 10-20% output incentives for the agrochemical sector
- To promote bulk drug parks, the Government has announced PLI schemes worth INR 1,630 crores.
- 100% FDI is allowed under the automatic route in the chemical manufacturing industry which has attracted investments worth USD 20 billion between 2000 to June 2022.



Future Of Chemical Manufacturing Industry in India:

Due to disruptions in the supply chain in China, plenty of opportunities have opened up in the Indian **chemical manufacturing industry**. Additionally, Anti-pollution measures in China will also benefit Indian chemical manufacturers. Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIR) policy is expected to attract investment worth USD 280 billion by 2035. Special incentives through PCPIRs or SEZs to encourage downstream units will propel the growth of the chemical industry. If you are interested to start and scale up your chemical industry, register in **SolutionBuggy** and get all the services from idea ignition phase to complete industry setup.

Source: www.solutionbuggy.com



HOW SPECIALITY CHEMICALS ARE TRANSFORMING INDIA INTO A GLOBAL SUPERPOWER?

The Indian specialty chemicals market is expected to rapidly grow to \$40 billion by 2025, making it the fastest growing chemicals market in the world, primarily due to China's disproportionate growth, showing great promise in terms of production capacity, product quality, and return on investment. In this article, we intend to talk about the factors responsible for driving this gigantic growth while detailing out its journey so far and its future moving forward.

Journey So Far : The performance of the Indian chemical industry has been extremely diverse and can be widely categorized into agrochemicals, petrochemicals, polymers, bulk chemicals, specialty chemicals, and fertilisers. India manufactures 16 % of the global dyestuffs and dye intermediates and is also the world's fourth largest producer of agrochemicals after the United States, Japan, and China.

The global buyer market for specialty chemicals is about \$700 to \$750 billion, and India exports 4% of it, while China has roughly 15% of the market, so a major export opportunity for Indian chemical manufacturers lies in the specialty chemicals domain. An amalgamation of competitive construction costs, stringent quality practices, prolific process expertise, lower capital and manpower costs, robust intellectual property protection, and an educated pool of seasoned professionals have catapulted this growth to have lesser dependence on China for global organizations looking to diversify their supply sources. Let's not forget the rising demand in domestic consumption.

Endless Possibilities Ahead : The Indian specialty chemicals is by large one of the most matured sectors. The past few years have witnessed a gradual shift in the fundamental business, propelled by China's stringent environmental compliance policies and forcing sourcing managers worldwide to diversify their supply sources. The aggravating trade relationship between the United States and China is creating more opportunities for India's chemical industry.

The chemical industry is in dire need of more than \$10 billion to fund the incremental capex and working capital as manufacturers seek backward integration and set up units on a large scale.

Two marquee projects in the conception stage but talks about the endless possibilities ahead for the chemical industry are BASF's participation in a propylene-based chemical unit in India, and Saudi Aramco's proposed buyout of refining business of the Indian conglomerate Reliance Industries. Clariant's acquisition of Vivimed Labs' personal care business and investment in Privi Organics, Sanmar Chemicals and ADI Finechem, by Fairfax India, the Canadian firm Fairfax Financial Holdings further boosts confidence for the whole industry by large.

Great Investment Opportunities

- The latest developments in the global chemical industry, escalated by the pandemic, has led to more investment opportunities for foreign investors, led by Japan, Korea, and Thailand as was evident in the \$210 million acquisition of SeQuent Scientific Ltd. by Carlyle and \$414 million acquisition of JB Chemicals and Pharmaceuticals Ltd. by KKR respectively.
- Grasim Industries signed an agreement with Lubrizol Advanced Materials in 2020 to manufacture chlorinated polyvinyl chloride resin in Gujarat.
- Ultramarine & Pigments has commissioned a new pigments plant recently in Andhra Pradesh to manufacture pigments with a capacity of 15,000 TPA.
- Meghmani Finechem Limited is also going to expand its existing Caustic Soda Plant from 294000 TPA to 400000 TPA, and it is expected to be commissioned in Q2 FY23. MFL also recently commissioned India's first Epichlorhydrin and CPVC plants.
- Grasim had also inaugurated a new Chlor-Alkali plant in Andhra Pradesh in April this year which has a potential to emerge as the single largest location of Chlor-Alakli production in the country with a capacity of 1,50,000 tonnes per annum.
- Fluorine major SRF has also commissioned BOPP Film Line & Metallizer at Indore with an annual production capacity of 60,000 MTPA.

India's federal government supports the shift from China to India in a range of industries, launching a scheme to push for indigenous manufacturing of pharmaceutical active ingredients, positioning India to emerge as a competitive manufacturing hub in the years to come. It is additionally establishing plastics production parks in several states.

The road ahead: The Indian government sees the chemical industry as a key growth driver, accounting for 25% of the manufacturing sector's GDP by 2025, therefore, allocating US\$ 32.2 million to the Department of Chemicals and Petrochemicals in the Union Budget of 2021-22. This is how the industry can hugely benefit:-

- A single point of contact for all kinds of approvals.
- Income tax exemption of 100% on export income for SEZ units for the first 5 years, 50% for the next 5 years, and 50% of ploughed-back export profit for the next 5 years.
- 100% FDI is permitted in the chemicals sector with a few exceptions.
- Implement a production-link incentive system for the agrochemical sector with 10-20% output incentives.

With such positive development, India will undoubtedly dominate the specialty chemicals market globally.

Source: Elchemy





ENTERPRISE RISK ASSESSMENT: HOW TO ADDRESS KEY BUSINESS RISKS

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An Enterprise Risk Assessment (ERA) is a Systematic and a Continuous Process of Pro-actively Identifying Potential Risks of an Organization and Assessment of their Impact and Likelihood of Potential Future Risk Events that are most Consequential to the Organization’s Ability to execute its Strategy and Achieve its Business Objectives within a Stated Time Horizon.

What is Risk?

As per **PMBOK of Project Management Institute (PMI)**, Risk is defined as “An uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives”.

ISO 9001:2015 defines risk as **the effect of uncertainty on an expected result**. An effect is a deviation from the expected – **Positive or Negative**.

From the above Two definitions, it is very clear that a **Risks may have a Positive or Negative deviation from the expected**. Risk is commonly understood to be negative or adverse effect in the general parlance. However, in risk-based thinking opportunity can also be found – this is sometimes seen as the positive side of risk. While discussing the **Enterprise Risk Assessment, we shall discuss here mainly about Negative Risks**.

Understanding Risks in an Organization

Risk is about what could happen and what the effect of this happening might be. Risk also considers how likely it is. Risk is assessed as a combination of the probability of occurrence and the severity of that if it occurs. That means, Risk is about how likely (frequently) it happens and what could happen and what the effect of this happening might be (Severity).

The risk-based thinking approach is likely to be much more effective in allowing organisations to become stronger, fitter businesses. The better your organization manages risks, the better prepared you are to face uncertainties. Risk-based thinking requires companies to Evaluate Risk when Establishing Strategies, Taking up New Projects, Investing in New Ventures, Defining Business Processes, Controls and improvements,

Adopting New Systems or even Assessing the Existing Businesses.

Enterprise Risk - Categories : Risks in an Organization may emerge from many areas of business: there may be Strategic Risks, Operational Risks, Technological Risks, Market Related Risks, Quality & Process Risks, Financial Risks, Economic Risks, Environmental Risks, Occupational Safety & Health Risks, Information Security / Cyber Risks, Legal Risks, Regulatory or Compliance Risks etc. as shown below with Examples.



Enterprise Risk Assessment Process

Enterprise Risk Assessment Process is an on-going process, having following Steps or Processes.

Deeply Understand Business of an Organization :

Ø Understand the Business, the Operations & the Working Conditions, the Industry & Competition, Stakeholders etc.

Establish the Context, Circumstances & Set the Objectives:

Ø Get clear Insights of Organization’s Objectives and Goals to set the tone for understanding the Organization’s Business Outlook.

Ø It is very essential that Establishing a clear link between Objectives, Risks and Selected Strategic Initiatives by aligning with Organization Priorities.

Gather Data / Information & Identify Major Risks:

∅ Gather Data, Collect Relevant Information & Perspectives from the People **on the Ground** to understand what Risks could have the most Significant Impact on the Organization. It is a good practice to consider **what Drives the company's value during the strategy / objective setting.**

∅ Once the **key drivers** are identified, and then begin to identify risks that can potentially hinder the success of each key driver.

Prepare Risk Profile & Establish Risk Assessment Methodology:

∅ A Risk Profile is an evaluation of an individual's willingness and ability to take risks. It can also refer to the threats to which an organization is exposed.

∅ A corporation's risk profile attempts to determine how a willingness to take on risk (or an aversion to risk) will affect an overall decision-making strategy. Provide a clear profile of major risks that can negatively impact the company's overall Business.

Analyse Risks - Understand & Evaluate Impact of Risks on Business:

∅ Identified Risks are Carefully Analysed to determine both their Likelihood of Occurrence and Potential Impact on Business. **This is a quantitative analysis of the types of threats an organization faces with a goal of providing a non-subjective understanding of risk by assigning numerical values to variables representing different types of threats and the danger they pose.**

Develop Action Plans / Risk Response Strategies & Validate:

∅ This is a Formalization of Risk Response Stage, where Formal Action Plans & Risk Measures for Risks falling outside the Acceptable Tolerance Levels are Finalised. **Once Potential Risks are Finalized & Analysed its Impact, Optimal Risk Response Strategies are Formulated with Consensus of all the Concerned Team Members.**

∅ Also Risk Champions / Owners are Identified and Assigned the Responsibility to them. Initiations are taken to Validate the Action Plans, Formalize Process of Audit & Business Continuity Planning.

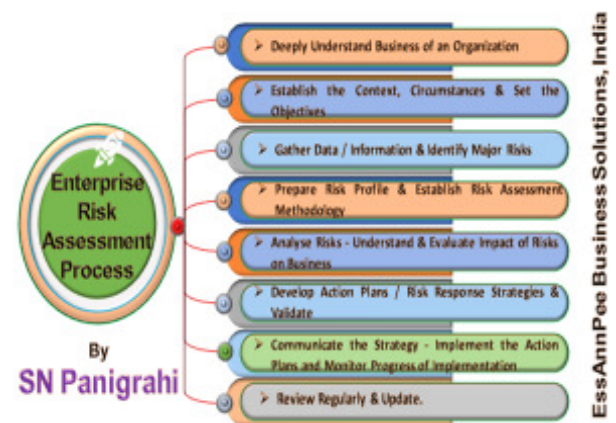
Communicate the Strategy - Implement the Action Plans and Monitor Progress of Implementation:

∅ Once the Risk Response Strategy is in Finalised, it must be Communicated to all the Concerned. Relevant information and data need to be constantly monitored and communicated across all departmental levels concerned.

∅ Measure, monitor, and communicate the effectiveness of the risk response strategies by utilizing any key risk indicators deemed effective by that organization.

Review Regularly & Update:

∅ Risks are Dynamic in Nature, needs to Monitor and continuously update the **Real Risks**. Enterprise Risk Assessment is a Continuous; on-going & evolving process of Pro-actively and Pragmatically Document Risk Management Policies & Processes.



Risk Assessment - Concluding Comments:

Enterprise Risk Assessment Tool is used by organizations to Manage Risks Pro-actively and Seize Opportunities related to the achievement of their Objectives. Risk Assessment outcomes help Organizations to Establish Strategic Priorities and Activities to Tackle Key Risks. Increasing Awareness and Imbibing Risk Culture with Involvement of Top Management & Cross Functional Teams shall enhance the Organizations ability to Understand, Identify, and Develop Action Plans in Advance to Pro-Actively Manage Risks.

Disclaimer : The views and opinions; thoughts and assumptions; analysis and conclusions expressed in this article are those of the authors and do not necessarily reflect any legal standing.

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<https://www.youtube.com/watch?v=Ow3mXYkLijM&t=661s>

You may also View @ SlideShare @ the Link Below:

<https://www.slideshare.net/SNPanigrahiPMP/enterprise-risk-assessment-a-proactive-measure-to-establish-strategic-priorities-to-tackle-key-business-risks-by-sn-panigrahi>



QUIZ

1. A supply chain consists of all _____ involved directly or indirectly in fulfilling a customer need
 - a) activities
 - b) policies
 - c) strategies
 - d) Entities
2. Supply chain integration includes three different focuses namely cooperation, coordination, and _____
 - a) Commercialization
 - b) Collaboration
 - c) Conversion
 - d) Consumption
3. A characteristic NOT observed in a push supply chain is
 - a) Anticipatory
 - b) Responsive
 - c) Forecast based
 - d) Warehousing oriented
4. The goal of a supply chain is
 - a) To deliver the right product to customers at any cost
 - b) To monitor and control all entities involved in successfully delivering a product
 - c) To collaborate with as many number of suppliers as possible
 - d) To adopt technology that best suit the business strategy
5. Supply chain value is created by
 - a) Providing multiple range of products
 - b) Taking feedback from customers
 - c) Making more accurate forecasts
 - d) Increasing customer satisfaction at the lowest possible cost
6. INCOTERMS are used to
 - a) Allocate responsibility for cost, risk, and ownership
 - b) Specify delivery terms and conditions
 - c) Fix price and date for delivery
 - d) Allocation of risk and cost between buyer and seller
7. A successful supply chain is characterized by
 - a) Large number of suppliers
 - b) Large number of contracts
 - c) Trust among trading partners
 - d) Arms length relationship with core suppliers
8. The effect of lack of synchronization among supply chain members is referred to as
 - a) Bottleneck
 - b) Bullwhip
 - c) Risks
 - d) Constraints
9. A key measurement in freight transportation is
 - a) Cubic foot
 - b) Square foot
 - c) Capacity utilization
 - d) Ton-mile
10. Industry 4.0 is the convergence of
 - a) Cyber-physical systems
 - b) Robotics and automation
 - c) Bigdata and artificial intelligence
 - d) JIT and cloud technologies

January Quiz Answers

- | | |
|-----|---|
| 1. | d |
| 2. | c |
| 3. | d |
| 4. | a |
| 5. | a |
| 6. | c |
| 7. | c |
| 8. | c |
| 9. | c |
| 10. | a |

ROLE OF GEM IN EMPOWERING MSMES

MRS. KSHEMLATA, MBA & DR. NRIPENDRA KUMAR
AGM/BHEL JAGDISHPUR

Introduction : Micro, Small, and Medium Enterprises (MSMEs) are the backbone of the Indian economy, contributing significantly to GDP, exports, and employment. According to the Ministry of Micro, Small and Medium Enterprises, the sector consists of around 63.4 million units and employs around 111 million people. However, MSMEs face various challenges such as limited access to markets, finance, technology, and skilled labor, which hamper their growth and competitiveness. The government has taken several initiatives to support and empower MSMEs, and one such initiative is the Government e-Marketplace (GeM). GeM is an online platform for procurement of goods and services by the government departments, organizations, and public sector undertakings (PSUs). In this article, we will discuss the role of GeM in empowering MSMEs in India.

Background of GeM : Government e Marketplace (GeM), facilitates online procurement of common use Goods & Services required by various Government Departments / Organisations / PSUs. GeM aims to enhance transparency, efficiency and speed in public procurement. It provides the tools of e-bidding, reverse e-auction and demand aggregation to facilitate the government users, achieve the best value for their money. The purchases through GeM by Government users have been authorised and made mandatory by Ministry of Finance by adding a new Rule No. 149 in the General Financial Rules, 2017.

GeM was launched by the government in August 2016, with the objective of making the procurement process transparent, efficient, and cost-effective. The platform provides a single window for online procurement of goods and services, with minimal human intervention, and maximum transparency. It is a one-stop-shop for all government procurement needs, and any registered buyer can purchase goods and services from registered sellers on GeM. The platform also provides various value-added services such as product catalogs, bid submission, and payment integration.

Role of GeM in Empowering MSMEs : The Micro, Small and Medium Enterprises are engine of inclusive growth and a very important sector of Indian economy. The MSME Sector has emerged as a vibrant and dynamic sector producing a vast range of products starting from basic Agro products to high precision engineering tools and equipment (Usharani&Gopinath, 2020). M. Alaguraja and G. Nedumaran (2020) mentions that one of the major issues affecting the performance of sector is Lack of Distribution of Marketing Channels. MSME's not adopting innovative ideas for promotion of the

products distribution and advertisements. Because of ineffective advertisement and poor marketing channels leads to a very poor selling. GeM provides the opportunity to MSMEs to showcase their products and also visibility of all requirements of government entities. As per detail available on GeM site on 12th Mar'23, 67,357 Nos buyer organizations and 5,995,932 Nos Sellers are registered on GeM Portal. Out of that, 856,401 Nos registered sellers and service providers are MSMEs. It is noteworthy to mention that order value processed on portal is 368390 Cr till 12th Mar'23 and out of that 52.50% order was placed on MSMEs by government entities. As noted earlier, to give equal opportunity to all the MSMEs, it is now mandatory for the entire government department to procure through the GeM portal only under rule 149 in the general financial rule 2017. Because of this, now the small-scale industries are able to get government orders. Access to information has also become easier and conducting business smoothly with the government has enhanced significantly with the use of GeM portal.

According to the researchers, GeM is providing equal and balanced opportunities to all the MSMEs to place bids and generate orders. Apart from that, it will also create transparency in transactions.

The GeM portal has been helpful in giving a competitive space to small players in a wide marketplace among large players. SMEs need a sustained cash flow to thrive in their business. By inclusion of government entities in their customer base, it fortifies their cash inflows as it ensures regular order book from the government given, they have large requirements with nil probability of bad debts along with timely payments to MSME.

The benefits to the seller as mentioned on GeM website are:

- Provide transparency and ease of buying
- Offers rich listing of products for individual category of goods/services
- Direct purchase for amounts upto INR 25000
- L1 purchase for amounts greater than INR 25000 and less than INR 5 Lakhs
- Proprietary Article Certificate Bid- Procurement of specific product as per requirement
- Price Trends and Price Comparison from Multiple Suppliers
- Direct notifications to sellers
- Integrated Payment System
- Easy to comprehend interface to search, compare, select and buy
- User friendly dashboard for monitoring supplies and payments

- Online grievance redressal mechanism for quick resolution
- Direct purchase, L1, Push button procurement,
- Bid/RA mode of procurement and forward auction for auction.
- GeM has enriched listing of approximately 10000 products categories and 290 services categories wherein millions of sellers have offered their catalogue.
- Buyers can now select bid duration between 3 & 45 days.
- Delivery period upto 365 days and upto 6 years with approval.
- Option to provide multiple consignee locations and quantity
- Multiple consignee can be selected for Services
- Pin-code based seller selection for Direct Purchase Mode
- ATC library available for addition of terms and conditions
- Additional Deductions can be applied by buyers at the time of bill generation
- Notification to buyers regarding:
- expiry of DP (Delivery Period) for the contract
- Initiation of cancellation of contract in case of non-delivery by sellers
- Buyer during technical evaluation can make a MSE seller eligible or ineligible for MSE purchase preference.
- Now buyers get the option to cancel the Product contract(s) even if the invoice has been generated by seller provided 15 days have expired from delivery period.
- 18 Banks have enabled GeM Pool Account

GeM has emerged as a game-changer for MSMEs in India, as it has provided them with a level playing field to compete with larger enterprises for government procurement contracts. Here are some of the ways in which GeM is empowering MSMEs:

Access to Government Procurement Contracts : One of the biggest challenges for MSMEs is to access government procurement contracts, as they often lack the resources and infrastructure to bid for large contracts. GeM has simplified the procurement process and made it more accessible for MSMEs. Any MSME with a valid GSTIN can register as a seller on GeM and offer their products and services to government buyers. This has opened up a vast market for MSMEs, which was previously inaccessible due to bureaucratic hurdles and lack of transparency.

Equal Opportunity to Compete : GeM provides MSMEs with an equal opportunity to compete with larger enterprises for government contracts, as the platform is based on a transparent, competitive, and rule-based bidding process. GeM follows a dynamic pricing model, where the prices of goods and services are determined by market forces, rather than fixed by the government. This provides a level playing field for MSMEs, as they can compete with larger enterprises based on their quality, price, and delivery capabilities, rather than their size.

Transparent and Efficient Procurement : GeM has brought transparency and efficiency to the government procurement process, which was previously plagued by corruption, delays, and inefficiencies. The platform provides real-time information on procurement, from tender creation to award of contract, and payment to the seller. This has reduced the time and cost of procurement, and also improved the quality of goods and services procured by the government. MSMEs benefit from the transparent and efficient procurement process, as they can focus on delivering quality products and services, rather than navigating bureaucratic hurdles.

Access to Finance: MSMEs often face challenges in accessing finance, as they lack collateral and credit history. GeM has tied up with various banks and non-banking financial companies (NBFCs) to provide working capital finance to MSMEs registered on the platform. This has enabled MSMEs to access finance at competitive rates, without the need for collateral. The platform also provides a rating system for sellers, based on their performance and quality of products and services. This rating system helps MSME

GeM portal is still evolving and upgrading continuously. Government is extremely aware of the sector's potential for growth, especially with a platform like GeM at its disposal. It is for the benefit of MSMEs and SMEs that services like GeMSahay provide access to credit swiftly at the time of order acceptance itself.

The GeM Portal is empowering MSMEs by providing opportunity to sell to stakeholders (All Government entities) they otherwise wouldn't access while also receiving assistance in terms of technology, marketing, and finance with services like GeM Sahay. Several researchers believe that GeM will increase employment opportunities, business growth and will provide the equal opportunity to MSMEs in conducting business in ever evolving digital world.

References:

<https://gem.gov.in/statistics> as accessed on 12th Mar'23

<https://www.businessworld.in/article/Modi-s-GeM-4-0-A-New-Way-For-MSMEs-/21-04-2022-426148/as> accessed on 12th Mar'23

Meeravali, S., Ramesh, K., Ajay Kumar, K., & Sekhar Babu, G. (2017). SSRG International Journal of Economics and Management Studies, 4(3).

M. Alaguraja and G. Nedumaran, Growth and Future Prospects of Micro, Small & Medium Enterprises in India, International Journal of Management (IJM), 11(11), 2020, pp. 3265-3275. <https://iaeme.com/Home/issue/IJM?Volume=11&Issue=11>

Usharani, M., & Gopinath, R. (2020). A Study on Consumer Behaviour on Green Marketing with reference to Organic Food Products in Tiruchirappalli District, International Journal of Advanced Research in Engineering and Technology, 11(9), 1235-1244.



BRANCH NEWS

LUCKNOW BRANCH

IIMM, Lucknow branch and santi kunj Ashiyana branch arrange jointly competition enter school program. Topic of program is 'Personality development ' on 12-03-2023 at IIMM , conference hall, Indira nagar Lucknow. Twenty prominent School of Lucknow participated in competition. First, second and third prize winners of students and teachers were given away by Mr. PK Bajpai, secretary of IIMM, Lucknow branch. After that lunch will be hosted by Shanti kunj Ashiyana branch, Lucknow.



PUNE BRANCH

IIMM-Pune branch organized a special get-together program for its members at Hotel Shree Panchratna, Pune on the eve of 21st January 2023.

Mr. Shripad Kadam (Chairman, Pune Branch) welcomed all the members to the first such program since the beginning of the pandemic. He updated all the members present in the event about a few achievements of Pune Branch and also inform them that the branch will be conducting a One Day Seminar on the theme of "Reinventing & Building Best SCM Practices for MSMEs & Corporates to improve Profits & Sustainable Growth" on the 25th of February 2023 and requested all the members for their participation in the same.



The event started with a session on Heal-Thy Relationships by Ms. Anuradha Bhatkar, which aimed to help us build stronger bonds with one another and cultivate a positive environment. During this session, we discussed the importance of communication, trust, and respect in our relationships. There was a lot of sharing of thoughts in this interactive session on how to build strong relationships with each other within our personal & professional lives. We learned how to effectively communicate our needs and express our feelings in respectful ways.

During this event the Mr. Shripad Kadam made an announcement about the Distinguished Members Awards bestowed on Mr. Shrikant Lale, (Past Chairman, and Pune Branch & Past Vice President (West), IIMM) by the National Awards Committee of IIMM. Since Mr. Lale could not go to Chennai where the Natcom 2022 was held, he was invited to this event and presented with the memento by Mr. Arjunsingh Rajput (Hon. Secretary, Pune Branch).

The second part of our get-together was an exciting karaoke event. Everyone had a great time singing their favorite songs and showing off their unique singing talents. We also took turns cheering each other and making it a truly special night.

Overall, our get-together attended by around 75 of our members with their spouses was a great success. We also enjoyed some delicious food after the event. It was a great way to bond and get to know each other better.

We look forward to many more such events in the future!

One Day Seminar on “Re-inventing & Building Best SCM Practices for MSMEs & Corporates to Improve Profits & Sustainable Growth”.

Yet another wonderful corporate event was successfully completed by the Pune IIMM branch. The auto cluster program is our flagship event which is a one-day seminar for the MSME on a relevant topic. This year the topic was “Re-inventing & Building Best SCM Practices for MSMEs & Corporates to Improve Profits & Sustainable Growth. The seminar featured a variety of events like plenary sessions, case studies, quizzes, and panel discussions. The day’s event was compared by our Hon. Treasurer Mr. Prakash Rao. The presence of a number of past chairman and industry leaders graced the occasion. There were more than 150 participants who were MSME leaders, senior executives, students and academicians. It was a day of networking, building partnerships and comradery.

Mr. Deepak Karandikar, Director, Praditi Press Parts Pvt.Ltd.& President, MCCA, Pune delivered the keynote address and exhorted the audience to continuously strive for greater things and not to get into a complacent mode. He quoted from a conversation he had with the external affairs minister Mr. S. Jaishankar who discussed how one can continuously improve. Networking and being in constant touch with people are important in this effort.



The first plenary speaker was Mr. Mohan Nair, Managing Director, Esquire Healthcare & Logistics Pvt. Ltd. He through his example of working with Kimberly Clark set the direction for the day's events. Mr. Mohan Nair talked at length about Emerging & Ongoing SCM Trends and how we should prepare ourselves to meet the changing scenario. Technology has enabled organizations to conduct business in online mode and the backbone of this new world of business is supply chain and logistic management. The supply chain hence needs to raise up to meet these new challenges and opportunities. He also made reference to the proposed National Logistics Policy and how MSMEs need to gear up to meet the requirements laid out in this policy.

Mr. Sanjay Kachare, Director, Supply Chain, India & South Asia, Kimberly-Clark was the second plenary speaker of the day who talked on SCM Strategies to Convert Global Challenges into Opportunities. He gave a broad picture of the logistic landscape and how Kimberly-Clark manages its supply chain process.

The third plenary speaker of the day was Mr. Santosh Wagh, Head SCM, Kalyani Maxion Wheels (P) Ltd. & Maxion Wheels Aluminum India (P). Ltd. He talked on the subject, 'Critical Management Skills in Disruption Era & Use of Automation'. Mr. Wagh gave some beautiful case studies on how industries develop these critical skills.

The seminar also featured two case studies on Developing Robust SCM for MSMEs – one on Logistic Sector by Mr. Prashant Tamhankar, Director, Vistar Logitek Pvt. Ltd. and another on the Manufacturing Sector by Mr. Anil Shete, CEO - Shree Om Techno Services & Director - Sprotech Engineering Pvt. Ltd. The studies outlined the importance of customizing the processes in order to make them more efficient and to reduce the cost of production. It also highlighted the need to integrate emerging technologies into SCM systems in order to create seamless customer experience.

The last event of the day was a panel discussion which was moderated by Mr. Mohan Nair. Mr. Arjunsingh Rajput the Hon. Secretary of IIMM Pune and Mr. Sanjay Suranglikar, Sr. GM, Central Purchase, Tata AutoComp Systems Ltd, responded to an array of questions posed by Mr. Mohan Nair. The spontaneity and the personalization of the answers of Mr. Rajput was very much appreciated by all.

Overall, the seminar was a great success and the attendees found the insights provided by the speakers, in-depth and informative. It encouraged the participants to think outside the box and brainstorm ideas on the best practices needed to be implemented in order to create robust SCM for MSMEs and Corporates.

RAEBARELI BRANCH

Indian Institute of Materials Management, Raebareli branch organized one-day seminar on " Role of GeM in Materials Management" on 19th Mar'23 at Batholi

Resort, Dedauli, Lucknow Road, Raebareli, Uttar Pradesh. The seminar was graced by the presence of Chief Guest Mr Jyoti Prakash Pandey, Spl. Director General/RDSO and Guest of Honour, Mr. Dinesh Kumar Gautam, Works Manager, Visaka Industries Limited. The Seminar is attended by 80 delegates from the adjoining industries and organizations like SGPGI, Lucknow, BHEL, Jagdishpur, Modern Coach Factory(MCF), Raebaerli, HAL Korba, Norther Railway, Indira Gandhi Rashtriya Udaan Academy, Visaka Industries Limited etc.



Release of Souvenir on the occasion of One-day Seminar at Raebareli Branch on 19th Mar'23



Attentive Delegates during Technical Session - Seminar at Raebareli Branch on 19th Mar'23



Garlanding of Ma Saraswati by Chief Guest and dignitaries -Opening session, of Seminar at Raebareli branch on 19th Mar'23

Notable attendees of seminar were Mr ND Rao, Principal Chief Materials Manager/MCF Raebareli and Prof.(Dr.) Suresh K Sharma, former National President (IIMM), CA Ajeet Kumar, VP (North) IIMM, Mr. LR Meena, former NST & NC Alwar Branch, Mr Sanjay Awasthi, Chairman- Kanpur Branch with Mr. Kailash Nath and Mr. GK Agnihotri, National Councilor from Raebareli branch Dr. Harendra Kumar and Mr. Sapan Kumar Bandhophadhay also graced the occasion.



Group Photo on the occasion of One –day Seminar at Raebareli Branch on 19th Mar'23.

Chairman Raebareli branch Sh CB Sharma welcomed all the guests and dignitaries. Chief guest Mr Pandey while addressing the gathering highlighted the role of materials manager in an organization. he also discussed the benefits of using the GeM platform, such as transparency, cost-effectiveness, and faster procurement.

In the opening Session, Prof. Sharma highlighted the achievement of Raebareli branch and informed the gathering about the activities of Centre for Research in Materials Management(CRIMM). He motivated the delegates to join IIMM as research fellows to further the objective of IIMM for growth of supply chain profession. Prof. Sharma while speaking during technical session, discussed how the GeM has brought the transparency and speed in procurement process. He further emphasized on upcoming technologies that will be game changer of our profession in future namely blockchain technology, machine learning, 3D printing and Artificial Intelligence(AI).

VP(North), CA Ajeet Kumar elaborated on the power of branding and discussed about the tools and techniques to brand products/individuals/organizations. He elaborated how the GeM as one window solution for procurement of all types of goods and services is evolving. He was confident that brand GeM will be synonym of government procurement in coming days.

The main speaker of the technical session, Sh Praveen Wadhvani enriched the knowledge of participants on GeM functionalities and replied the queries. The seminar highlighted the role of the GeM platform in supporting the government's 'Digital India' initiative and its contribution to promoting ease of doing business. The participants were also informed about the various initiatives undertaken by GeM to enhance its user experience, including the introduction of new features, vendor ratings, and online training modules.

Finally, Dr. Nripendra Kumar, Chairman- Core Committee of the seminar presented the overview of seminar. During his address, he added that GeM is playing a major role in empowering the MSMEs. He informed the gathering that as on 12th Mar'23, order value processed on GeM portal was 368390 Cr and out of that 52.50% order was placed on MSMEs by government entities.

He also proposed vote of thanks and remembered the contribution of all members of core committee of seminar including Mr AK Singh, organizing secretary, Mr. Avinash Shukla, Jt. Organizing Secretary, Mr. Prashant Dwivedi, Chief MOC, Mr. Ashish Jaiswal, Treasurer & Chief editor Souvenir, Mr. Junaid Ahmed, Chief Coordinator, and Mr. Abhay Mehrotra , Chief Advisor. He also thanked Raebareli branch executive committee for their support including Mr. SU Khan, Vice Chairman, Mr. Deep Chandra, Secretary, Mr. Dinesh Chandra, Treasurer. Mr. SC Shukla, Mr. BK Pandey, Mr. SK Trivedi, Mr. Yogesh Kumar Bhardwaj and Sh UC Tripathi (Immediate Past Chairman).

UDAIPUR BRANCH

Procurement Awards 2022 – 2023 : Indian Institute of Materials Management Udaipur Branch is proud to have organized the annual awards ceremony Procurement Awards 2022 – 2023 held on 19th February 2023 at BhairavGarh Palace Resort which was attended by glittering luminaries and professionals in the field of Materials and Supply Chain Management and CEOs, CFOs & CPOs from various parts of Rajasthan.





This exciting event celebrates the most impressive individuals in procurement function from different organizations. It is an opportunity to position as a leader in the new business reality and gain recognition in front of a global audience. The Awards were open to organizations in all segments (Micro & Small, Medium, and Large), established in Rajasthan.

Procurement Award (2022-23) is a brainchild of Udaipur Branch of IIMM. For the first time in India, such an award specific to procurement function was conceived to felicitate individuals only more than the organization.

The Chief Guest for the event was Shri Rajendra Bhatt, Divisional Commissioner – Udaipur besides the Guests of Honour - Shri Sanjaya Singhal, President – Udaipur Chamber of Commerce & Industry and Founder of Secure Meters Ltd. and Shri Arun Misra, CEO - Hindustan Zinc Ltd. (Vedanta Group), Udaipur. The guests also included Shri HK Sharma, National President of IIMM, the Joint Chairman of CRIMM (Centre of Research in Materials Management) Shri Suresh Sharma along with Vice President North, Shri Ageet Kumar. Guests from other branches like Shri L R Meena, NC IIMM Alwar also graced the occasion with their presence.

The awards were conceived to let the procurement professionals showcase that their work is valued and offer them an opportunity of celebration, which in turn enhances their corporate status and serves as the motivation to do well within their respective organization.

Applications were invited from individuals of organizations of varying magnitude in size and scale to participate in the Awards eligibility. Since, we are based in Rajasthan, we had invited applications from individuals notwithstanding whether he or she is a Member of IIMM; but employed in an organization in Rajasthan or outside Rajasthan but fully involved in the Procurement functions for unit(s) located in Rajasthan. While multiple entries from single organization were allowed as these were individual awards, it was encompassed in a single application for all these categories. The awards were in three (3) categories for the three sectors i.e. Small, Medium & Large:

- Procurement Excellence Award
- Supplier Collaboration & Innovation Award
- Digital Impact Award

So in all 9 awards were to be given, three in each sector. A good response was received in the Large sector specially as compared to the Medium & Small sectors. Applications that qualified for the awards were shortlisted based on completeness and quality of information provided relevant to work domain. Two Screening committee members – Mr. P P Bhattacharya & Mr Anshul Mogra had executed one of the toughest task. To select just 5 out of almost 50 applications in a category would have been difficult. Needless to emphasize that due diligence was exercised in the shortlisting of applications without any prejudices.

The qualified applications were judged by a panel of three Jury Members, each being an expert in their field and coming from diverse areas. The Jury Panel consisted of Shri Sudhir Mutalik, MD Positive Metering Pvt. Ltd. Nasik, CA Ageet Kumar, GM BSES Yamuna Power Ltd. and Shri Vinod Kumar, MD Corporate Channels Pvt. Ltd. All the three jury members emphasized on individual's potential rather than the organization they belonged to. A winner and runner ups were chosen for each of the award.

Shri Rajendra Bhatt emphasized that the quality of governance has vastly improved in terms of transparency and accountability assured the industry and trade of the support from the government to establish a vibrant business ecosystem that could open up opportunities of employment and business to flourish.

Shri Sanjaya Singhal echoed the sentiment that lots of things have evolved in the supply chain domain in the last few decades, there are lots of opportunities waiting to unfold to stay abreast with the needs of time. He also complimented IIMM for instituting such an award and hailed its role as an institution to hone the skills of the supply chain professionals. In fact, he also suggested that Indian Institute of Materials Management should consider itself renaming itself to Indian Institute of Supply Chain Management.

Shri Arun Misra, also emphasized the importance of supply chain management as pivotal function in the operational function of any industry in order to deliver the end-product or services to the consumer starting

from raw material to last mile delivery and how it could be achieved through improved collaboration with suppliers and enhanced Quality Control.

Besides the Award felicitation, the spotlight of the evening was the panel discussion on “Futuristic Trends of Supply Chain Management” and their implications in making India a vibrant economic powerhouse of the future. Mr. Anil Mishra, Chief General Manager, JK Tyred Kankroli; Mr. Jayanta Chakraborty, SCM Trainer & Consultant and NC IIMM Ahmedabad; and Mr. PK Jain, Director, Geetanjali Institute of Management, Udaipur also shared their immense knowledge to the large audience.



KOLKATA BRANCH

DIAMOND JUBILEE CELEBRATION OF KOLKATA BRANCH

Emerging of Indian Institute of Materials Management, Kolkata Branch : Indian Institute of Materials Management, Kolkata Branch, came into existence as the Purchasing Officers Association of India in 1960 at a time when the function of the Materials Management was beginning to emerge as a distinct management profession/discipline. Since then it has unswervingly served the cause of Materials Management in this country and in 1975 merged with two other Professional Association – National Association of Materials Management, Bombay and Materials Management Association of Hyderabad and formed the All India Body of “Indian Association of Materials Management” renamed thereafter as the “Indian Institute of Materials Management” in 1981.

ABOUT DIAMOND JUBILEE 1960 – 2020 : A successful journey of sixty years covering activities without break shows vitality and intrinsic strength of an Institution. It is all the more creditable when the organization transforms itself to suit the changing demands and needs thus confirming its dynamism. Absorption of new ideas, openness to in-depth knowledge and keeping mind abreast of the latest trend shows a thorough professionalism. Indian Institute of Materials Management, Kolkata Branch, which has its origin in the Purchasing Officers Association of India, has all these and more.



A sense of achievement, understandably, fills the minds of the members of IIMM Kolkata Branch, who look back with pride and satisfaction over the progress made during the last sixty years.

The glory belongs to the vanguard, the founders – a determined lot of visionary persons who saw to it that the profession is accepted by the top management of corporate sector no more as a service-oriented function but as a profit-oriented management discipline. The precursors motivated the budding professionals to transcend the boundaries of state, region and nation and join the mainstream of international happenings. Accordingly, the Purchasing Officers Association of India, had the courage of conviction to expand its horizon, at the cost of losing its independent identity, to form an All India Body with like-minded Associations for the betterment of the Materials Management Profession in India and thus emerged **INDIAN INSTITUTE OF MATERIALS MANAGEMENT** in 1983.

A Diamond Jubilee, no doubt, demands gaiety and celebration but it also instills a sense of responsibility and dedication by the profession for greater achievement in **pursuit of excellence in supply management**, as far as the management of scarce resource is concerned for sustainable development and to strive hard to obtain many more glory and accolades for our beloved Institute.

On this auspicious occasion of Diamond Jubilee Celebration of IIMM Kolkata Branch, being the senior-most establishment in IIMM family, pledge to leave no stone unturned to the noble cause of IIMM and our beloved Kolkata Branch and to the cause of Supply Chain Profession in the coming years.

Although Kolkata Branch completed sixty years of its existence in 2020, however, due to Covid -19 Pandemic, Branch could not celebrate Diamond Jubilee in 2020. As the pandemic turned to endemic subsequently, Kolkata Branch geared up to celebrate Diamond Jubilee in a befitting way in 2023. Accordingly, an Organizing Committee at the Branch level was constituted to stage the show. An Advisory Committee inducting National Office Bearers and Past Chairpersons of the Kolkata Branch was also constituted to have their advices and blessings.

The Diamond Jubilee Celebration scheduled on 24 – 25th February, 2023 held at Hotel Vivanta, Kolkata, On the 1st Day, i.e., on Friday, the 24th February, 2023, a Corporate Quiz was organized at 5.00 p.m. at Hotel Vivanta on the theme “Pro-Connect – Supply Chain” where altogether eleven corporate teams consisting of two budding supply chain professionals in each team participated. The quiz was so thrilling not only for participants but also for audiences also. There were several preliminary rounds to select five teams for the final round. The final round was as exciting as all the teams were fighting neck to neck. Finally, teams of Gainwell Commosales Private Limited and Linde India Ltd. emerged to be the Winner and Runner respectively. The Corporate Quiz was graced by Mr. H K Sharma, National President, Mr. J S Prakash Rao, Sr. Vice President, Mr. G K Singh, Past National President, Mr. Malay Chandan Majumdar, Immediate Past National President, Mr. Rana Das, Vice President (East), Prof. Saibal Mukhopadhyay, Director, Institute of Business Management, Jadavpur University, Past Chairpersons and Faculty Members and Executive Committee Members of Kolkata Branch.

Mr. Raj Kumar Mitra, faculty members and practicing SCM professional, played the role of Quiz Master. Mr. Amit K Majumdar and Shri Sudip Sengupta were assigned as scorers. The Winner and Runner Teams were handed over respective Trophy and Certificates. All the participants were also given Participation Certificates. National President and Sr. National Vice President in their brief deliberation praised the Kolkata Branch for presenting such an incredible evening programme. They also appreciated the Kolkata Branch for imparting quality education in the wide domain of SCM for many years which has been rightly adjudged by the National Head Quarters by awarding the Kolkata Branch the Best Metro Branch for Education for several consecutive years.

According to them, an accomplished journey of sixty years towards the cause of imparting professional management education and being a platform of Supply Chain Fraternity is undoubtedly praiseworthy and Kolkata Branch achieved it and showed the way to sustain and flourish against all obstacles to the noble cause. Mr. G K Singh, Past National President and Mr. Malay Chandan Mazumdar, the Immediate Past National President in their brief speeches, appreciated the Kolkata Branch for presenting such a dazzling show. Prof. Saibal Mukhopadhyay, Director, Institute of Business Management, Jadavpur University, highly

acclaimed Kolkata Branch for presenting such a memorable event and he expressed to explore all possibilities to launch professional course in collaboration with IIMM in future.

The Corporate Quiz was followed by sumptuous buffet dinner at the poolside of the Hotel. Mr. Koushik Roy, Branch Chairman and Mr. Partha Bhattacharya, Chairman, Diamond Jubilee Organizing Committee invited all to join dinner.

On the 2nd Day, a Knowledge Seminar on “Future of Supply Chain – Crisis Shapes the Profession” was organized at Hotel Vivanta. Eighty SCM Professionals from private and public sector organizations attended the whole day seminar. Participants were presented a Diamond Jubilee Kit and 1st Day Cover of the Diamond Jubilee Souvenir. Mr. Sanjay Gupta, Member, Diamond Jubilee Organizing Committee, anchored the Knowledge Seminar by his enchanting voice with charming words. In the Inaugural Session, Mr. Koushik Roy, Chairman, IIMM Kolkata Branch, in his welcome address, briefly touched the journey of IIMM Kolkata Branch and welcomed delegates, hon’ble guests and speakers. Mr. Partha Bhattacharya, Chairman, Diamond Jubilee Organizing Committee, outlined the theme of the Seminar. Mr. Malay Chandan Majumdar, Immediate Past National President, Mr. G K Singh, Past National President and Mr. J S Prakash Rao, Sr. Vice President in their deliberation, spoke on emerging of IIMM and its journey in pursuit of excellence in supply management. They placed on record sincere thanks and gratitude to Kolkata Branch for inviting them to witness such a dazzling celebration programme. Mr. H K Sharma, National President, IIMM, graced the occasion as the Special Guest of Honour. Mr. Sharma in his deliberation congratulated Kolkata Branch for its accomplished journey of sixty years and highly praised for celebrating the Diamond Jubilee setting a new milestone for other Branches.

Mr. Sanjoy Mukherjee, Executive Director, Distribution-Technical, CESC Limited graced the occasion as the Chief Guest and discourse on the task and challenges being encountered by the supply chain professionals in the changing scenario. His practical oriented presentation engrossed participants.

Mr. Kaushik Mukherjee, Hony. Secretary, Kolkata Branch, proposed Vote of Thanks and invited all to join for Tea.

The 1st Technical Session of the Knowledge Seminar was chaired by Mr. P P Sengupta, senior faculty member of the Branch. Mr. A K Mohanty, Executive Director (Materials & Contracts), Coal India Limited, spoke on “How is Coal India Designing its Future Supply Chain” and elucidated the following :-

- Technology enablement in coal mines for transformation across business value chain
- Leveraging “Digital Technology” as an accelerator for demonstrating performance enhancement from the coal mines

- Defining Coal Sector's technology transformation ambition and prepare workforce in Coal Sector for industry 4.0 Digital Technology
- Increasing productivity, safety & sustainability while reducing environmental impact by upgrading conventional technologies to new technologies.

The 1st Technical Session followed by Knowledge Break I on "How Coal India Partners are gearing up for adjusting in the upcoming digital onslaught".

The 2nd Technical Session was designed on "How GEM Portal Envisages to Design the Future Supply Chain ?" Mr. T Mishra, veteran SCM Professional and Senior Member of IIMM, chaired the Session. Mr. Brajesh Kumar, Resource Person for GEM Portal, discoursed the topic highlighting the key areas as follows :-

- Key levers of GEM Portal
- Benefits of Usage to Purchaser
- Benefits of Usage to Supplier
- Long Term Impact Analysis

The "Government e-Marketplace" Portal i.e., "GEM Portal" being the most deliberated event among SCM Professionals now-a-days, this session was considered to be a learning session. Speaker and Session Chairman in their discourses cleared doubts, queries and hesitation in using of the GEM Portal.

The 2nd Technical Session followed by Knowledge Break II on "How Users of GEM Portal are Reacting to the Upcoming Environment ?"

This Session was followed by Lunch. Mr. Sanjoy Gupta, on behalf of the Organizing Committee, invited Delegates, hon'ble Guests, and Speakers and Industry Representatives to join lunch.

The 3rd Technical Session was on "How to Remain Focused within a Crisis Environment ?". It was a discourse from Spiritual Perspective. Swami Atmapriyananda Maharaj, Pro-Chancellor, R K Mission Vivekananda Educational and Research Institute, very kindly graced the Knowledge Seminar and taught a lesson to the audience. There was a pin-drop silence in the auditorium as audience was spellbound. In his deliberation, Swamiji draw examples from ancient Sanskrit Literature including the Purana and the Geeta. His deliberation seemed to be a holy bath for the audience. Mr. Debasis Mallick, Chairman, Education Sub-Committee, Kolkata Branch, briefly introduced Swami Atmapriyananda Maharaj and felicitated him on behalf of the Institute.

There was a slot for Tea Break and Mr. Sanjoy Gupta invited all to Tea.

The 4th and Final Technical Session was designed with CPO Panel Discussion on the emerging issues as follows :-

- Resilience or Agility – Which is more important ?
- Cost Perceptions for Implementation
- Digitalization – Is it the Key Enabler ?
- Balancing Human Activities and Digitalization

The Panel Discussion was chaired by Mr. Debasis Mallick and the Panellists were **Mr. Anik Basu, Senior Director - Enterprise East, Moglix, Mr. Sujoy Chakravorty, General Manager (Commercial), GRSE, Mr. Aniruddha Banerjee, Senior Vice President Operations, Spencer's Retail Ltd.**

The Panelists discoursed the issues with practical exposure and their lucid presentation were highly acclaimed by the participants. The panelists were also kind enough to elucidated questions raised by the delegates. Finally, Mr. Debasis Mallick summed up the Session.

The Day-long Knowledge Seminar was anchored by Mr. Sanjoy Gupta with his charming voice. Finally, Mr. Gupta placed on record sincere thanks and gratitude to all attendees and invited them to join the evening programme at 6.30 p.m. at the same venue. The evening programme comprised of Felicitation of Dignitaries, Hon'ble Guests, Past Chairpersons of Kolkata Branch and their Spouses followed by Diamond Jubilee Dinner.

The evening programme was also anchored by Mr. Sanjoy Gupta and started at 6.30 p.m. Mr. Koushik Roy, Branch Chairman, in his introductory address, welcomed Mr. H K Sharma, National President, Mr. J S Prakash Rao, Sr. Vice President, Mr. G K Singh, Past National President, Mr. Malay Chandan Majumder, Immediate Past National President, Mr. R S Johar, Past Branch Chairman, Mr. Asok Dasgupta, Past National President and Past Branch Chairman, Mr. B G Sengupta, Past Chairman, Mr. D N Chakravarti, Past Chairman, Mr. S K Mukherjee, Past Chairman, Mr. Amal Chakraborty, Past Chairman, Mr. Sudhin Mitter, Past Chairman, Mr. Sukalyan Sarkar, Past Chairman, Mr. Animesh Chattopadhyay, Immediate Past Chairman, spouse of Late A K Srivastava, Past Chairman, and other dignitaries and guests and felicitated them with befitting plaque and a sapling.

Late D K Acharyya, Past Chairman of the Branch, was awarded posthumously and the commemorating plaque was handed over to his son, Mr. Deb Kumar Acharyya. Mr. Asok Dasgupta, Past President of IIMM and Past Chairman of Kolkata Branch, came forward and steered the felicitation programme and reminisced the history of emerging of 'Indian Institute of Materials Management'. On this auspicious occasion, Kolkata Branch took the opportunity to felicitate Mr. A K Mohanty, Executive Director (Materials & Contracts), Coal India Limited and Mr. Rakesh Ranjan, Executive Director, Damodar Valley Corporation for their professional achievements and acumen.

Finally, Mr. Sanjoy Gupta, was felicitated by the Branch Chairman with a sapling for his unique presentation style in steering the whole-day programme. Last but not the least, the Chairman, Kolkata Branch, called upon staff members on the dais, appreciated them for their exceptional performance in organizing the Diamond Jubilee Celebration Programme in a dazzling manner and handed over sapling to each of them. Mr. Ram Bahadur Subba, Ex-employee of Kolkata Branch was also

felicitated for his commendable services to Kolkata Branch for more than fifty years. Finally, Mr. Kaushik Mukherjee, Hony. Secretary, Kolkata Branch, invited all to Diamond Jubilee Dinner.

REPORT ON VALEDICTION CEREMONY OF ONE YEAR SHORT-TERM COURSE ON “MATERILAS MANAGEMENT, LOGISTICS MANAGEMENT, SUPPLY CHAIN MANAGEMENT AND E-COMMERCE” HELD ON FRIDAY, THE 17TH MARCH, 2023 AT IIMM HALL AT 6.30 P.M.

Valediction Ceremony of One Year Short-term Course on “Materials Management, Logistics Management, Supply Chain Management and E-Commerce” held on Friday, the 17th March, 2023 at 6.30 p.m. at IIMM Hall. Altogether 29 candidates enrolled for the Course, divided in two Semester. Practicing SCM Professionals imparted the enrolled students who are employed in various organizations in the wide domain of SCM. Course materials were provided to participants. Classes were held on Saturdays in the evening session to facilitate students to attend classes. Written Examination was taken on completion of 1st Semester to assess the progress of students. Final examination followed by viva voce was held and on the basis of the report-card, gradation of students has been made. Mr. Koushik Roy, Chairman, Mr. Kaushik Mukherjee, Hony. Secretary, Mr. Sanjay Gupta, EC Member and Mr. DebasisMallick, Course Co-ordinator graced the valediction ceremony. Mr. Koushik Roy, Chairman, Kolkata Branch, announced result of the final examination and handed over Mark sheet and Certificate to the successful students. Students were also invited to record their expectation from the Institute. Their suggestion/comments were noted accordingly. They were also advised to keep in touch with the Institute and to apply for IIMM Membership. Since Kolkata Branch maintains Data Bank of SCM Professionals for placement, they were also advised to submit their current CVs, if desire. There was an arrangement for refreshment for the participating students. Finally Mr. DebasisMallick, Course Co-ordinator, proposed vote of thanks and wished students every success in their career with this professional course. He also advised to enroll for PG Courses being imparted by IIMM.



VADODARA BRANCH

INTERNATIONAL WOMEN’S DAY CELEBRATION AT IIMM VADODARA ON 18th MARCH 2023 : International Women’s Day is celebrated in many countries around the world. It is a day when women are recognized for their achievements irrespective of Nationality, Ethic, Linguistic, Cultural, Economical or Political. It is an occasion for looking back on past struggles, accomplishment and more importantly looking ahead to the untapped potentials and opportunities that awaits future generations of women.

IIMM Vadodara also celebrated the Women’s Day at

its Office Hall on 18th of March 2023 with Theme:

“Women’s Empowerment - Key to Global Transformation”.

Different programmes related to the women were organized by our Chairperson Dr. Bharti Trivedi and her Team. All the present members participated in the event were over joyful and enthusiastically participated in the Event. The programme was half day programme, kept at IIMM Office Hall (1st Floor). Around 45 Invited Women Life Members and some IIMM Life Member’s Spouse were present to mark this special day.

There was an inaugural speech by Chairperson - Dr. Bharti Trivedi welcoming all the delegates, followed by an inspirational speech for women’s day by Mr. Lalbhai Patel – Former National President IIMM. To Commemorate this special day, we had with us Mrs. Anupama Kothari from Anwasha Foundation which is a Not-for-Profit Organisation working towards sustainable social development through community action against Plastic Waste and activating action-based community across India to tackle waste problems and creating sustainable ecosystem, philosophy of Take – Make – Collect Upcycle. They are also into educating under privileged children in their own school where they provide vocational education to school drop out children.

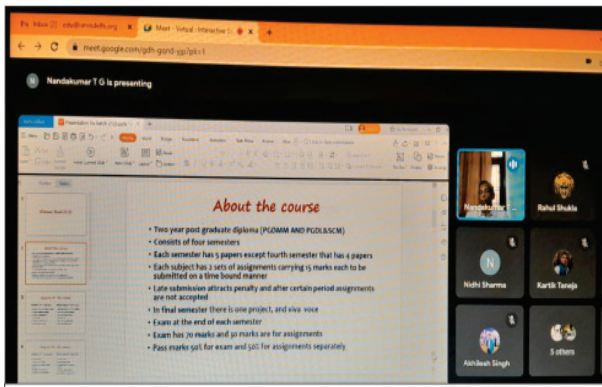


Dietician Priyanka Vyas also graced the occasion and discussed different diets, importance of nutrition in different stages of women, what is balanced diet, tips for healthy eating and tips for lifestyle modification. She also replied to the queries related to medical problems associated with women. All the participants overwhelming asked their queries and the session was very fruitful.

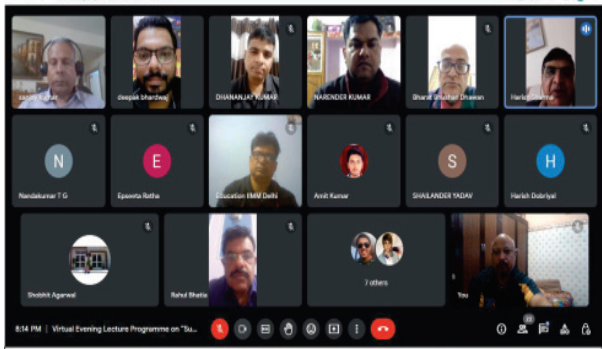
The celebration also included the entertainment quotient for women such as Antakshari, Music, Rangoli and other entertaining activities. It was a fun filled corporate celebration programme. The event was followed by Lunch.



DELHI BRANCH



Delhi Branch organised an online interactive session for the newly admitted batch January 2023 of PGDMM/PGDL&SCM students. Mr. T G Nandakumar, Chairman Education, Delhi Branch explained about IIMM and the course briefly. Date & Time: 26th March, 2023 (Sunday) from 6.00 pm.



Delhi Branch organised a Virtual Evening Lecture on "Sustainable Public Procurement" Eminent Speaker Mr. SANJAY KUMAR, IRSS, Chief Materials Manager, Western Railway. All EC Members & Members Delhi Branch appreciate the lecture. Date & Time: February 11, 2023 (Sunday) from 7.00 pm



Various aspects of Inventory Management starting from why Inventory is built, why control is required, various costs involved in inventory, inventory control tools, Milk run, VMI, EOQ, different levels, Kraljic Model and ABC analysis etc were discussed. Digitization of inventory, case study of one of the lead company and role play were also part of the training. Myself, Mr O. P. Longia and Mr Sahil were the faculties. Program was well appreciated by one and all.

CHANDIGARH BRANCH

Indian Institute of Materials Management Chandigarh branch organized one day training program on Inventory Management for Seals Strips Wheels India Ltd on 23.3.23 at Hotel Home tel Chandigarh. A group of 35 professionals starting from executive to General Manager attended the program.



ANKLESHWAR BRANCH

Indian Institute of Materials Management (IIMM) opened its 52nd branch at Ankleshwar on 16th March 2023 at a ceremony held at Hotel Paradise, Ankleshwar-Gujarat. The Chief Guest at the ceremony was Shri Baldevbhai Prajapati, President of LAGHU UDYOG BHARATI. The ceremony was also attended by Chairman, Quality Circle Forum of India and representatives of many eminent personalities in and around Ankleshwar.

Inaugural ceremony was presided over by Shri H.K. Sharma, National President and attended by Shri J.S. Prakash Rao, Sr. Vice President Shri K. R. Nair, Vice President – West, Shri. G.K. Singh, Former National President Shri Shripad Kadam, Pune Branch Chairman. While addressing the gathering at opening ceremony of Ankleshwar Branch, Vice President West Shri K.R. Nair hoped that branch would be the leading branch in Western Region and would help in improving the

Industries in general and Chemical Industries in particular. Inaugural ceremony was also attended by President.

Chairman Pune branch congratulated the incoming Chairman on the opening of the branch. Mr. G.K. Singh-Former President expressed his happiness at the opening of the branch at the Chemical Hub of Gujarat and hoped that the branch would increase its membership substantially in a very short span of time because of its proximity to major chemical industries in the region.

Sr. Vice President Shri J.S. Prakash Rao mentioned about the growth of Indian economy and revival of industrial activities in general and the changes in the absorption of technology in supply chain management activities post covid 19 and hoped that branch would contribute a great deal in improving supply chain practices at large in Ankleshwar.

Shri Baldevbhai Prajapati, President of LAGHU UDYOG BHARATI, while addressing the gathering emphasised on the role of small scale industries in the development of the economy of the country and appreciated the role of IIMM in the same. He appreciated the educational programmes and training activities of IIMM and expressed happiness about offering professional courses at very economical fees. He also thanked IIMM for opening the branch at Ankleshwar.



Shri Dinesh K. Patel, Managing Director of DAXESH PETROCHEMICAL PVT. LTD addressing the gathering thanked IIMM for playing a leading role in supply chain management in the country.

Shri Rahul Pradhan, Chairman QCFI –addressing the gathering emphasized on focusing the quality aspects on overall framework of supply chain management and promised to extend help to the industries in developing quality. Shri Rahul Pradhan, Vice President-Zydus, mentioned the role of supply chain management and requested audience to become members of IIMM to focus on the development of Supply Chain Management.

Shri H.K. Sharma, National President -IIMM expressed his happiness on opening of the 52nd branch of IIMM at Ankleshwar and requested all concerned to take advantage of the IIMM branch opened in their vicinity. He emphasised on the changing phase of supply chain management and requested professionals to keep abreast of the developments for helping companies to improve their bottom line. He specially thanked VP West, Chairman Pune Branch, Ajay Padhye, NC for their efforts for opening the branch at Ankleshwar.

The coordinator of Ankleshwar branch, Shri Arvind Patel, thanked the entire team of NHQ, Shri G.K. Singh, Former National President and dignitaries for making the dream come to a reality and promised that all efforts would be made to make it one of the best branches.

Vote of thanks was proposed by National Councillor Shri Ajay Padhye.



EXECUTIVE HEALTH

20 MINUTES OF EXERCISE CAN HELP YOU AVOID HOSPITALIZATION FOR DIABETES, STROKE, AND OTHER CONDITIONS

JULIA RIES

A new study Trusted Source published in JAMA Network Open found that not only does physical activity decrease people's risk of developing health problems but it prevents them from being hospitalized as well.

Researchers evaluated the health data of over 81,000 patients between the ages of 42 to 78.

Physical activity can boost immune function, improve insulin sensitivity, and benefit heart and lung health.

New research has found that just 20 minutes of exercise a day can help keep people with a variety of health conditions out of the hospital. It's well known that regular exercise is linked to a lower risk of cancer, diabetes, and heart disease, however, until this report, it's been unclear how exercise impacts the risk of common, less severe health conditions. The study Trusted Source, which published in JAMA Network Open on Thursday, found that not only does physical activity decrease people's risk of developing health problems — like anemia and gallbladder disease — but it prevents them from being hospitalized for the conditions as well.

The research adds to the evidence that physical activity is associated with better health outcomes. "This study provides additional insights about the association between physical activity and lower risk of hospitalization for various conditions that are not typically linked with physical fitness, such as urinary tract infections, gallbladder disease, and pneumonia," says Dr. Jimmy Johannes, pulmonologist and critical care medicine specialist at MemorialCare Long Beach Medical Center in Long Beach, CA.

Greater physical activity means fewer health problems

To determine how regular exercise impacts the risk of hospitalization for some of the most common health conditions, the researchers evaluated the health data of over 81,000 patients between the ages of 42 to 78. Each participant received a wrist-worn activity tracker for a one-week period. The team then analyzed how physical activity impacted the participants' risk of developing a health issue and being hospitalized for it. They found that, in general, the more people exercised, the lower their risk of developing common health conditions — like diabetes, pneumonia, ischemic stroke, gallbladder disease, iron-deficiency anemia, urinary tract infections (UTIs), colon polyps, venous thromboembolism, and diverticular disease — was. Greater physical activity was also associated with a lower risk of being hospitalized.

Exercising 20 additional minutes each day was associated with a 3.8% lower risk of being hospitalized for colon polyps, for example, and a 23% lower risk of being hospitalized for diabetes. According to the researchers, the findings suggest that exercising for at least 20 minutes a day may be an effective, non-pharmaceutical intervention for staying out of the hospital.

"I think this is more supporting evidence that increased

physical activity is associated with better health outcomes," Johannes said. According to Johannes, it's important to note that some of the participants may be prone to hospitalization due to health issues that also prevent them from being able to workout.

Why exercise can protect our health : There's no shortage of evidence showing that regular exercise can lower the risk of health conditions and keep people out of the hospital. A report from 2020 Trusted Source found that, in general, the more people move, the longer they live. That study found that "adults who took 8,000 or more steps a day had a significantly reduced risk of death over the following decade than those who only walked 4,000 steps a day," says Dr. Michael Fredericson, a professor of orthopedic surgery at Stanford Health Care.

Physical activity can boost immune function, improve insulin sensitivity, and benefit heart and lung health. Exercise also lowers inflammation in the body and reduce risk factors, like high blood pressure and obesity, that exist for a number of health conditions. "It may also reduce the risk of comorbidities, such as ischemic heart disease, diabetes, and deconditioning, which can complicate an illness," Johannes said. Physical activity also helps people sleep better and manage their stress levels, Fredericson added.

Tips for exercising more regularly : Going on daily walks is a great starting point and is attainable for many people. "I generally recommend starting out with 10 to 15 minutes of walking per day, 2 to 3 days per week and gradually increasing the time, intensity, and days per week," Johannes said. Some other options include cycling, running, resistance training, swimming, tennis or pickleball, tai chi, says Fredericson. For those who have difficulty scheduling in physical activity, it may be worth getting a fitness tracker to monitor daily steps, Johannes says. He recommends aiming for at least 5,000 steps a day — but, when it comes to physical activity, anything is better than nothing.


Past research Trusted Source has found that even one to two-minute bursts of exercise can boost your health. Short, quick bursts of physical activity — think jogging to the bus, playing with your dog, or running up the steps — is associated with a significantly lower risk of death. "Exercise doesn't have to be continuous and can be broken down into several segments throughout the day with the same health benefits," Fredericson said.

The bottom line : Twenty minutes of exercise a day can help keep people with a variety of health conditions out of the hospital, according to new research. In general, the more people exercise, the lower their risk of developing common health conditions — and being hospitalized for them — is.

Source: www.healthline.com



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