April 2018
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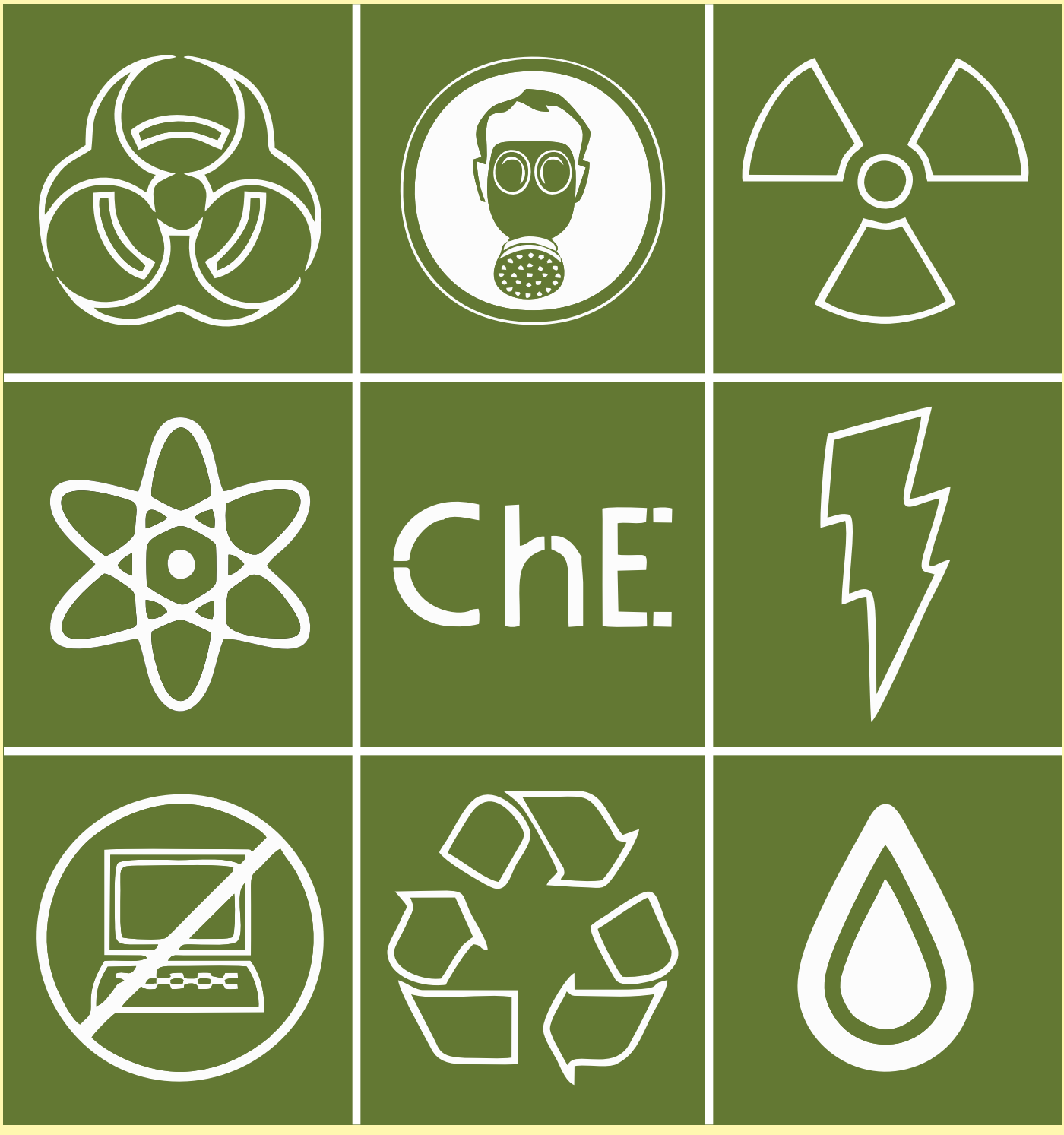
N E W S L E T T E R

ASMECHEM



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ASMECHEM CHAMBER OF COMMERCE & INDUSTRY OF INDIA

OBJECTIVES

- To work towards betterment of Industries including SMEs in India.
- To represent ASMECHEM on statutory bodies for proactive involvement and logical outcome.
- To carry out special efforts to promote exports of various products of the members.
- To organize industry related seminars for the benefit of industries and for their all round growth and profitability.
- To develop cohesion and better interaction among members for betterment of work environment, quality improvisations and other mutual benefits.
- To participate in various international exhibitions in India/overseas and help members to show case their products.
- To take up grievances of the members with the concerned statutory authorities.

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ASMECHEM

Newsletter Advertisement Tariff

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The Gazette of India

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Executive Secretary

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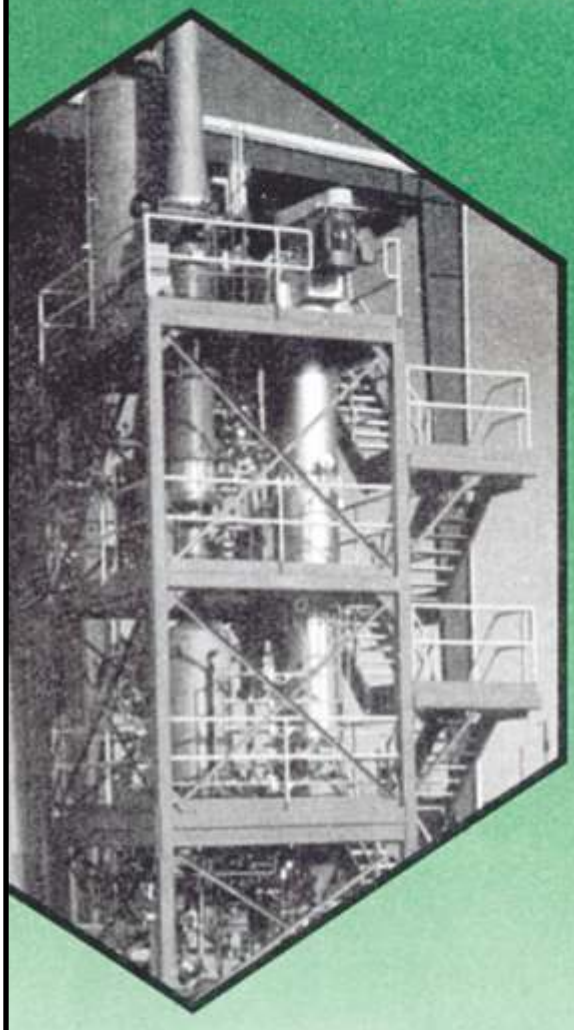

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President's Message

I consider it a great honour and privilege to serve as the President of the ASMECHEM Chamber of Commerce & Industry of India and my heartfelt thanks to one and all for their unfailing support. It's really a worthwhile effort to have come out with another meaningful and interesting Newsletter of ASMECHEM.

The chemical industry in India is a thriving one in existence for many years and has been progressing in spite of facing various obstacles like the global recession, fiercely competitive production costs, negative propaganda against Indian chemical products, difficulty in maintaining the balancing act between imports and exports of chemical products, higher logistics/transportation costs and more…

India's total agricultural land is almost equal to that of entire Europe. Europe's total chemical production is worth a whopping US$ 1, 800 billion, whereas India's total chemical production is barely US$ 39 billion. But, India's Environmental NGOs keep complaining about too much pollution due to chemicals being produced in India. Such false propaganda about the Indian chemical industry results in indefinite delays in granting clearance for production or even expansion of the chemical production capacities.

Stressing on the high potential and faster growth of the Indian industry and to gain a major increase in exports, the Indian Prime Minister Messages of "Make in India" and "Ease of doing Business" have been laudable to become the source of inspiration and motivation for the captains of the Indian industry, thus widening the gates for enhancing exports, new job opportunities and increased production.

India's chemical industry needs a strong support for uninterrupted power supply along with better logistic facilities which will pave the way for producing the best quality of speciality chemicals at very competitive prices. ASMECHEM believes in sharing the knowledge by organizing various seminars primarily aimed at various issues related to production and taxation. Once again, I wish all our members a grand success and hope to receive their continuous support from one and all, to achieve our goals in the years to come.

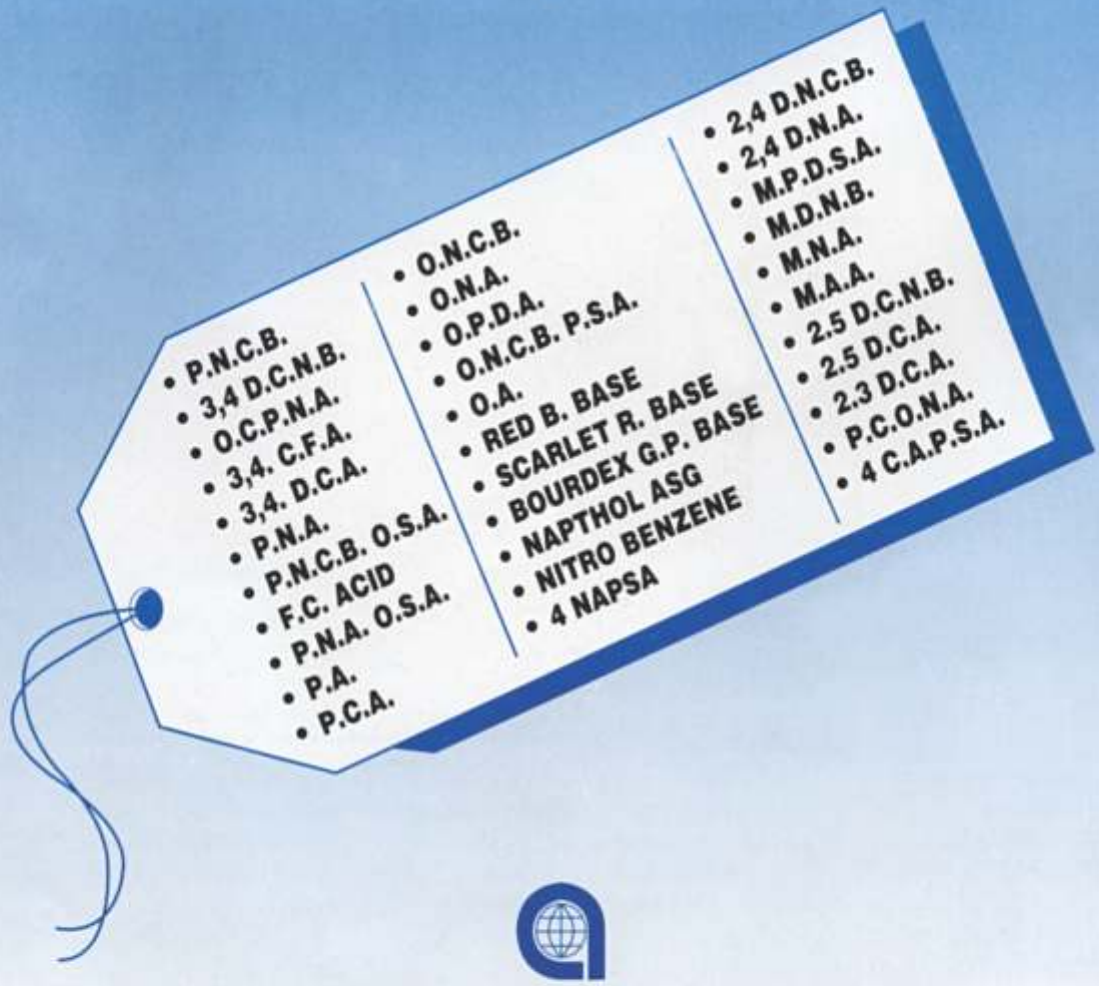
Thank you

Best Regards

RajjuShroff

Making our chemistry work for you

Experience, research, expertise it's what has helped our company in finding the best way to meet your specific needs at competitive rates.



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HIGHLIGHTS OF ACTIVITIES BY ASMECHEM CHAMBER OF COMMERCE & INDUSTRY OF INDIA, MUMBAI:

- A KEYNOTE ADDRESS ON "POST GST IMPACT AND BENEFITS" BY MR. MIHIR AJIT SHAH, CONSULTANT, ADVISOR ON GST AND TRAINER IN INTERNATIONAL BUSINESS - ORGANIZED BY ASMECHEM DURING ITS 27TH AGM AT ROOP LEELA BUNGALOW, JUHU, MUMBAI ON OF ASMECHEM ON 28TH SEPTEMBER,2017.
- A KEYNOTE ADDRESS ON "ECGC SERVICES TO INDIAN EXPORTERS" BY MR. ANAND SINGH, REGIONAL MANAGER(WESTERN REGION), EXPORT CREDIT & GUARANTEE CORPORATION(ECGC- A GOVT. OF INDIA ENTERPRISE), MUMBAI DURING 27TH AGM OF ASMECHEM ON 28TH SEPTEMEBER, 2017.
- A SEMINAR ON "GST & ITS IMPLICATIONS" BY MRS. VARSHA KOLHATKAR, ASSISTANT COMMISSIONER & MR. PANKAJ KUMAR, DEPUTY COMMISSIONER FROM CENTRAL EXCISE COMMISSIONERATE, MUMBAI ORGANIZED BY ASMECHEM CHAMBER OF COMMERCE & INDUSTRY OF INDIA WITH SUPPORTING PARTNER 'EDELWEISS' MUMBAI AT ROYAL BOMBAY YACHT CLUB, ON 28TH JUNE, 2017.
- A KEYNOTE ADDRESS ORGANIZED BY ASMECHEM ON "GLOBAL SUPREMACY IN INDIAN AGRICULTURE" BY MRS. SANDRA R.SHROFF, VICE CHAIRMAN, UPL LIMITED, MUMBAI DURING OUR 26TH AGM ON 02ND SEPTEMBER, 2016 AT ROOP LEELA BUNGALOW, JUHU, MUMBAI.
- SEMINAR ORGANIZED ON 'MODEL GST LAW & CRITICAL ISSUES IMPACTING CHEMICAL INDUSTRY" AT HOTEL MARINE PLAZA, MUMBAI ON 30TH NOVEMBER, 2016 JOINTLY WITH CHEMEXCIL.
- A DELEGATION OF ASMECHEM MEMBERS TO "NATIONAL CHEMICAL LABORATORY" (NCL), PUNE. SINCE NCL IS HAVING THE BEST R & D LABORATORY FOR CHEMICALS OUT OF ALL 'CSIR' LABORATORIES WHO ARE OFFERING MANY OPPORTUNITES FOR SME & LARGE SCALE FOR DEVELOPING NEW PRODUCTS, TECHNOLOGIES, ETC.
- A KEY NOTE ADDRESS BY PROF. (DR) G.D. YADAV, VICE CHANCELLOR, INDIAN CHEMICAL TECHNOLOGY, MUMBAI ON "WHY CHEMISTRY IS MORE IMPORTANT FOR MAKE IN INDIA?" IN MUMBAI.
- SEMINAR ON 'MSME CONCLAVE" FOR MSME MEMBERS IN MUMBAI.
- SEMINAR ON "INSTRUMENATION" AT CENTRE OF EXCELLENCE, VAPI (SUPPORTED BY MASTER INTEGRATORS, MUMBAI) JOINTLY WITH VAPI INDUSTRIES ASSOCIATION (VIA)
- SEMINAR ON 'FOREX EXPOSURE & RISK MANAGEMENT" JOINTLY ORGANIZED WITH CHEMEXCIL, ADDRESSED BY EMINENT SPEAKERS FROM NSE (NATIONAL STOCK EXCHANGE) & PHILIP CAPITAL, MUMBAI.
- SEMINAR ORGANIZED ON 'NEW SERVICE TAX REGIME" JOINTLY WITH CHEMEXCIL BY SERVICE TAX COMMISSIONER, MUMBAI.
- SEMINAR ORGANIZED ON "CENTRAL EXCISE & RELATED MATTERS" BY COMMISSIONERS OF CENTRAL EXCISE, MUMBAI JOINTLY WITH CHEMEXCIL.
- SEMINAR ORGANIZED ON "FOREIGN TRADE POLICY & PROCEDURES – JOINTLY WITH CHEMEXCIL.

- SEMINAR ORGANIZED ON "EXPORT DOCUMENTATION/ INCENTIVES & CUSTOM CLEARANCE PROCEDURES".
- SEMINAR ORGANIZED ON "FUMIGATION & TOXIC MONITORING" AT VAPI.
- WORKSHOP CONDUCTED ON "R & D SUPOORT TO SMALL SCALE UNITS & PATENTING IN INDIA AND ITS SCOPE" IN ASSOCIATION WITH CENTRE OF EXCELLENCE & VAPI INDUSTRIES ASSOCIATION AT VAPI
- SEMINAR CONDUCTED ON "RECESSION – WHAT NEEDS TO BE DONE" (JOINTLY WITH CHEMEXCIL).
- SEMINAR CONDUCTED ON "REACH" (JOINTLY WITH CHEMEXCIL).
- ORGANIZED A SEMINAR ON "PRIOR ENVIRONMENTAL CLEARANCE FOR NEW PROJECTS & EXPANSION" AT VADODARA WITH CII, ICC (INDIAN CHEMICAL COUNCIL, GUJARAT CHAPTER) & ASMECHEM.
- SEMINAR ORGANIZED ON "BANKING FINANCE FOR EXPORT BUSINESS" BY EMINENT SPEAKERS FROM THE INDUSTRY AND BANKERS.
- REGULAR PARTICIPATION IN VARIOUS EXHIBITIONS SUCH AS: CHEMSPEC INDIA(The fine & speciality chemicals Exhibition) ORGANIZED BY CHEMICAL WEEKLY, MUMBAI WHEREIN WE HAVE A SME PAVILION FOR OUR MEMBERS AVAILING STAND(S) AT SUBSIDIZED RATE OFFERED BY THE ORGANIZER SPECIALLY FOR THE BENEFIT OF OUR MEMBERS TO SHOWCASE THEIR PRODUCTS AND SERVICES FOR THE LAST SO MANY YEARS SINCE INCEPTION OF THE SAID EVENT IN MUMBAI,.
- INDIA CHEM, MUMBAI ORGANIZED BY FICCI, NEW DELHI.
- INDIA CHEM , VIBRANT GUJARAT & TRADE SHOWS AT AHMEDABAD.
- "IPX INDIA" FOR PAPER & PULP PRODUCTS IN MUMBAI.
- "CAPINDIA" FOR CHEMICALS & PLASTICS AND ALLIED PRODUCTS IN MUMBAI ORGANIZED BY VARIOUS COUNCILS. WE PARTICIPATE AND INVITE MEMBERS TO TAKE PART IN THIS EXHIBITION REGULARLY.
- INVITE FOREIGN DELEGATES OF OUR MEMBER INDUSTRIES INTO INDIA TO TAKE PART IN REVERSE BUYERS & SELLERS MEET ORGANIZED BY CHEMEXCIL UNDER MDA SCHEME DURING CAPINDIA EXHIBITIONS REGULARLY.

ISSUES TAKEN UP ON BEHALF OF OUR MEMBER INDUSTRIES WITH CONCERNE GOVERNMENT/STATUTORY AUTHORITIES FOR SUITABLE AND REMEDIAL ACTIONS.

- TAKEN UP ISSUES REGARDING GOVERNMENT'S INITIATIVE IN REDUCTION IN "TRANSACTION COSTS".
- INVITE MEMBERS TO TAKE PART IN THIS EXHIBITION REGULARLY.
- INVITE FOREIGN DELEGATES OF OUR MEMBER INDUSTRIES INTO INDIA TO TAKE PART IN REVERSE BUYERS & SELLERS MEET ORGANIZED BY CHEMEXCIL UNDER MDA SCHEME DURING CAPINDIA EXHIBITIONS REGULARLY.
- ISSUES TAKEN UP ON BEHALF OF OUR MEMBER INDUSTRIES WITH CONCERNED GOVERNMENT/STATUTORY AUTHORITIES FOR SUITABLE AND REMEDIAL ACTIONS.
- TAKEN UP ISSUES REGARDING GOVERNMENT'S INITIATIVE IN REDUCTION IN "TRANSACTION COSTS".

- REPRESENTED GROUP OF CHEMICAL MANURFACTURERS TO MINISTRY OF COMMERCE & INDUSTRY AND THEN TO THE MINISTRY OF FINANCE FOR ISSUING NOTIIFICATION PERTAINING TO IMPOSIING ANTI DUMPING DUTY FOR THE INDIAN IMPORTERS.
- HOSTING OF VISITING STUDENTS' DELEGATION FROM MEXICO IN MUMBAI.
- WE HAVE TAKEN UP DEFAMATION CASE AGAINST GREENPEACE INDIA (IE. GREENPEACE INDIA SOCIETY), AN NGO ORGANIZATION VS ASMECHEM CHAMBER OF COMMERCE & INDUSTRY OF INDIA ON BEHALF OF ONE OF OUR MEMBER INDUSTRIES.
- WE, ASMECHEM CHAMBER OF COMMERCE & INDUSTRY HAVE SPECIALLY TAKEN UP ISSUE/REQUEST ALL CONCERNED AUTHORITIES REGARDING "FUNCTIONING OF BANKS FOR ALL SEVEN DAYS OF THE WEEK" TO TAKE APPROPRIATE DECISION IN THE INTEREST OF INDIAN EXPORTERS AND IMPORTERS.
- GOVERNMENT OF INDIA, MINSITRY OF COMMERCE & INDUSTRY, DEPARTMENT OF COMMERCE HAVE DIRECTED JOINT SECRETARY (BANKING OPERATIONS), DEPARTMENT OF FINANCIAL SERVICES, MINISTRY OF FINANCE AND RESERVE BANK OF INDIA & OTHER CONCERNED DEPARTMENTS TO TAKE APPROPRIATE ACTION IN THIS REGARD AT THE EARLIEST.
- ISSUES SUCH AS THE FOLLOWING:

  A) WORKING OF POLLUTION CONTROL BOARD

  B) CORRUPTION FACED BY PESTICIDE INDUSTRY

  C) CORRUPTION AND HARRASSMENT AND MISUSE OF POWER AT LEGAL METROLOGY DEPARTMENT IN MAHARASHTRA.

  D) TAKEN UP A SPECIAL DELEGATION OF MEMBERS FOR SUBMISSION OF A MEMORANDUM OF VARIOUS ENVIRONMENTAL /CETP/ETC AND OTHER ISSUES SUCH AS ELECTRICAL SUBSIDY AND INTEREST SUBSIDY FOR THE BENEFIT OF OUR MEMBER INDUSTRIES WHO ARE IN GUJARAT STATE.

  E) CORRUPTION AND DEFAMATION CASE FILED AGAINST A POLLUTION ACTVIST AFTER BEING IMPLICATED IN THE FUND MATTER, EXPLANATION ABOUT NGT (NATIONAL GREEN TRIBUNAL).

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Editor's Note

With proud privilege, we are honoured to present another edition of the NEWSLETTER to our esteemed members.

ASMECHEM Chamber of Commerce & Industry of India has acquired a rich experience in its journey to attain meaningful and selfless excellence. During this journey, we have put in our best efforts for considering the interest of all segments of the industry by taking up noteworthy issues of our individual members and played a significant role to be an effective link between the industry and the statutory authorities; enlightened our members through organizing various seminars. We are continuously striving to enhance our proactive role as an Association.

To say the least, all these activities have been feasible only due to the frequent guidance and initiatives taken up by Shri Rajju Shroff, our respected President, who is a doyen of the chemical industry in India. The proactive involvement of Shri Lalit Chadha, our Vice President has been laudable as well.

We hope that this edition shall benefit our members beyond boundaries.

Happy Reading!

PRADEEP S. GANDHE
Hon. Secretary

Seminar on Instrumentation

A Seminar on "Instrumentation – an effective tool for success in Export" was organized by Asmechem Chamber of Commerce & Industry jointly with the Vapi Industries Association (VIA) and held on June 24, 2016 in Vapi. This was organized specially for the SME (Small and Medium Enterprises) Chemical Manufacturers. The first of its kind organized in Vapi, this Seminar was in the interest of those wanting to improve their efficiency and bottom line while increasing compliance with environment and safety norms had taken part in this seminar and to benefit from it.

Main objective of the Seminar

Automation has been widely used in the Chemical industry globally. Small and Medium Chemical manufacturers are still reliant on manual labour for monitoring and controlling their processes. This often leads to process errors and safety hazards. Automation of processes leads to uniformity and built-in process safety. However, if done wrongly, automation can be a painful process with poor outcomes. This seminar introduced automation to owners and managers of Small and & Medium chemical manufacturers.

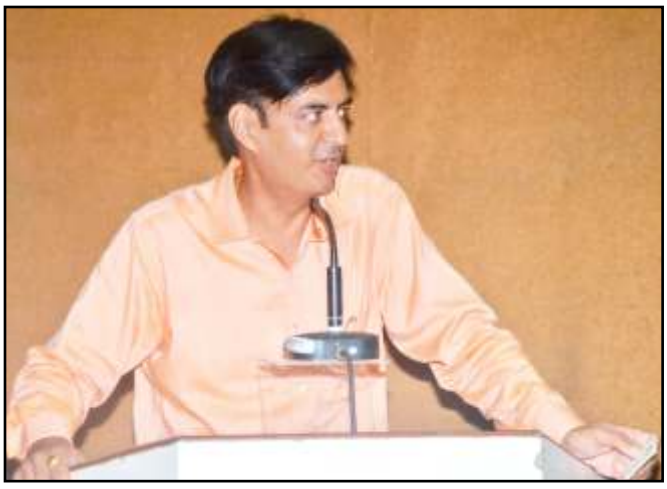
The days of operating the plants manually have become obsolete. Undoubtedly, the extent of batch operations has been coming down and the continuous and semi-continuous operations have been increasing continuously. Constantly growing in terms of its applicability and sophistication, automation plays an important role in achieving plant productivity, efficiency, effectiveness and ensures safety. Therefore, all the operating engineers and production managers are encouraged to apply and use feasible and appropriate strategies of "Automation" which encompasses the operation of equipment and packages and collectively entire plant.

The Workshop focussed on all the aspects of automation to provide concise and structured information to the participants with numerous case studies.

The following TOPICS were covered in the Seminar:

a) Basic concepts of Instrumentation & Automation
b) Scope & Limits of Automation in Chemical Plants
c) E&P Projects: Instrumentation & Controls have managed to get land from the Government. By enabling the tribals to cultivate forest lands and acquire the rights to own it, probably a bid by powerful lobbies to grab forest land for commercial exploitation has been thwarted.
d) Integration of appropriate Automation Technology in the Chemical Industry.
e) Economics of Automation
f) Case Study of Automation in the Chemical Industry at VAPI.
g) Batch Control in the Chemical Industry: Design Engineering & Role of International Standards –ISA 88-ISA (International Society of Automation).

Mr. Rajju D. Shroff, President of ASMECHEM Chamber welcomed all those present at the Seminar by an introductory speech and invited the dignitaries to the



dais with floral offering and thanking the organizers and for the valuable support of the VIA as well. The Honorary Secretary of the Vapi Industries Association offered mementos to the dignitaries and requested Mr. Ketan Merchant, Director, Master Integrators Pvt. Ltd. (MIPL), to conduct the Seminar.

The following topics were discussed in the said Seminar by MIPL and Rockwell Automation during the Session:

1) Introduction to Process Control by Mr. Sandeep, Manager, Process Solutions, Rockwell Automation.
2) Basic Process Control & Process Safety by Mr. Sandeep Redkar, Manager, Process Solutions, Rockwell Automation.
3) Batch Process Control by Mr. Ashutosh Kshirsagar, Global Process Technical Consultant, Rockwell Automation.
4) Utility Monitoring & Optimization by Mr. Amit Bhujbal, Sales Account Manager, Rockwell Automation.
5) Case Study: Effective Automation in the Chemical Industry by Mr. Ketan Merchant, Director, MIPL.
6) Demo on LBSM, MIPL followed by a Question &Answer session.
7) Immediately after lunch, there was a presentation on Air Measuring Instruments/Effluent Treatment & Measuring Instruments by Dr. R.C. Naik, Chemolab (a UPL Ltd. Group Company), Vapi, which organized A DISPLAY OF AIR MEASURING INSTRUMENTS/EFFLUENT TREATMENT & MEASURING INSTRUMENTS in the hall for an instant view meant for the benefit of the member participants.

The Seminar was concluded with vote of thanks by Mr. Sanjay Khatau, Partner, K. K. Poonja & Sons, Vapi and the Managing Committee Member of Asmechem Chamber of Commerce & Industry, Mumbai, by giving some valuable inputs on Instrumentation about how it's an effective tool for success in Exports.

Mr. Sanjay Khatau thanked all the members who had taken their time off from their busy schedules to attend this Seminar and the speakers as well, especially, the Vapi Industries Association of Vapi, which extended crucial support to make the event a successful one and wished all of them very best in their future endeavours.

26TH AGM followed by the keynote Address on

"GLOBAL SUPREMACY IN INDIAN AGRICULTURE"

by Mrs. Sandra R. Shroff, Vice Chairman, UPL LIMITED, Mumbai on Friday, the 2nd September, 2016, at the Roop Leela Bungalow, Juhu Tara Road, Juhu, MUMBAI-49.

Mrs. Sandra Shroff, the key speaker apprised the audience on the nuances of the subject and the latest developments and benefits in the field of Indian agriculture and the estimation of growth in the Indian agricultural sector and how farmers all over the world understood the concept of the new technology and the use of pesticides on various agricultural products which enabled increase the volume of growth and the benefits in this sector. Her speech was truly appreciated as she spoke with authenticity, clarity and empathy. The Session was well-attended by 60 members of ASMECHEM and the event went off very well.

Literature on the above subject is to be received from UPL for insertion.

A Brief Report on the Seminar on "Model GST Law: Critical Issues Impacting Industry"

In continuation of our capacity building initiatives, the Council had organized a seminar on "Model GST Law: Critical Issues Impacting the Industry" at the Hotel Marine Plaza, Mumbai. The Seminar was organized by CHEMEXCIL in association with ASMECHEM Chamber of Commerce & Industry of India on November 30, 2016

The Seminar was attended by Shri S.G. Mokashi, Additional Vice Chairman, CHEMEXCIL, Shri S.G. Bharadi, Executive Director (ED), CHEMEXCIL, along with its various officers and people from Mumbai and member-exporters from ASMECHEM. Shri Mokashi in his address welcomed the initiative and stressed on the need for understanding the Model GST Law. He also urged the participants to make the best use of such seminars for knowledge enhancement.

Shri Pradeep S. Gandhe, Honorary Secretary, ASMECHEM and several other ASMECHEM office bearers were present at the event. Shri Gandhe also addressed the gathering briefly.

The Technical Sessions where covered by VoxLaw, Mumbai which had deputed the following eminent speakers:

- Shri Udayan Choksi, Managing Partner
- Shri Samir Kapadia, Partner
- Ms. Tejal Mehta, Partner

The Speakers spoke on the Updated Model GST Law (Nov 2016): Critical Issues Impacting Industry and the way forward including training of manpower, IT preparedness, etc.

With over 50 participants attending the Seminar, the event evoked a good response. The participants asked several questions during the Seminar and their queries met with satisfactory replies from the eminent speakers.

Glimpses of the Seminar:

In the picture : *Shri Udayan Choksi, Managing Partner, VoxLaw giving an overview of the updated Model GST Law during the GST Seminar in Mumbai*

In the picture : *(From left to right) Shri S.G Bharadi, ED, CHEMEXCIL; Shri Pradeep S. Gandhe, Honorary Secretary, ASMECHEM; Shri S.G Mokashi, Additional Vice Chairman, CHEMEXCIL; Shri Udayan Choksi, Managing Partner-VoxLaw, Ms. Tejal Mehta, Partner- VoxLaw on the dais during the Seminar on Model GST Law at the Marine Plaza, Mumbai on November 30, 2016.*

In the picture : *Shri Pradeep Gandhe, Honorary Secretary, ASMECHEM, speaking during the GST Seminar in Mumbai*

In the picture : *Shri S.G Mokashi, Additional Vice Chairman, CHEMEXCIL addressing the gathering during GST Seminar in Mumbai*

Seminar on Complete Overview of Goods & Service Tax (GST) Law & Implications: A Brief Report

You may be aware that in India, the Goods and Service Tax (GST) came into effect from July 1, 2017, while ASMECHEM Chamber of Commerce & Industry of India organized a Seminar on "Complete Overview of Goods & Service Tax (GST) Law & implications" on Wednesday, June 28, 2017 at the Royal Bombay Yacht Club, near the Taj Mahal Hotel, Apollo Bunder, Mumbai 400 001.

GST, as we all know, is the biggest tax reform (Single Tax System) post-independence, which is set to replace the complex indirect tax regime, which is administered by the Government. It is, therefore, essential that the business community is educated about the preparatory steps / actions which need to be taken before the introduction of GST Regime, effective July 1, 2017.
A significant improvement towards a comprehensive indirect tax reform in the country, GST has created a business-friendly environment. Apart from ending distortions of different treatments of the manufacturing and the service sectors, it has led to the abolition of various other taxes, such as Octroi, Central Sales Tax, State level Sales Tax, Entry Tax, etc. It has also improved the Government's fiscal health as the tax collection system has become more transparent.

With the view to update its members on the Government's perspective on GST, Preparedness of the State of Maharashtra, the nuances of the Constitution Amendment Bill and critical components of GST that are much concern to the member industries, ASMECHEM Chamber of Commerce & Industry of India organized the Seminar.

The objective of this Seminar was to apprise the Trade & Industry about the following items:

- Overview of the GST Law.
- Concept-time-value-place of supply including Invoice & Valuation Rules.
- Types & Rates and its applicability.
- Input Tax Credit mechanism, ITC mismatch, etc., and how to address the same.
- Registration, Invoice & Payment mechanism.
- Record keeping, Return filing process & Refunds.
- Transitional provision: How to cross the bridge.

ASMECHEM had invited the following Government officials as Special Guest speakers for the Keynote Address on the subjects mentioned above.

The two Guest Speakers:

1) Mrs. Varsha Kolhatkar, Assistant Commissioner, Customs & Central Excise Department, Thane-Zone 1
2) Mr. Pankaj Kumar, Deputy Commissioner, Customs & Central Excise Department, Thane- Zone 1

The attendance was overwhelming as the hall was fully packed with more than 100 members from various industrial sectors.

The Seminar was indeed well attended between 5:30 p.m. to 8:30 and the session as a whole, went off well, which was rounded off with a sumptuous dinner.

A copy of introduction on the GST Law prepared by the Guest Speaker Mrs. Varsha Kolhatkar, Assistant commissioner, Customs & Central Excise Department is appended herewith as a ready reckoner for reference on various points in connection with the said subject.

Mrs. Varsha Kolhatkar
Assistant Commissioner
Kanjur Division. Mumbai-III
GOODS AND SERVICES TAX

Introduction

The introduction of Goods and Services Tax (GST) would be a very significant step in the field of indirect tax reform in India. By amalgamating a large number of central and state taxes into a single tax system, it would mitigate cascading or double taxation in a major way and pave the way for a common national market. From the consumer's point of view, the biggest advantage would be in terms of reduction in the overall tax burden on goods, which is currently estimated to be around 25% to 30%. It would also imply that the actual burden of indirect taxes on goods and services would be more than transparent to the consumer. Introduction to the GST would also make Indian products competitive in the domestic and international markets owing to the fuller neutralization of input taxes across the value chain of production and distribution. Studies show that this would have a boosting impact on economic growth. Last but not the least, this tax, because of its transparent and self-policing character, would be easier to administer.

WHAT IS GST?

- GST is a single tax on the supply of goods and services
- Destination based consumption tax
- From the manufacture to the end-consumer, tax on value addition
- Both the Centre and the State will tax each supply.

GST: PERCEIVED BENEFITS

To the Trade	To the Government
• Reduction in multiplicity of taxes	* Simpler tax system
• Mitigation of cascading/ double Taxation base	* Broadening of tax
• More efficient neutralization of taxes and taxes especially for exports collection	* Improved compliance revenue
• Development of common national market	* Tax booster
• Simpler tax regime	* Efficient use of resources

- Fewer rates and exemptions
- Conceptual clarity (Goods vs. Services)

TAXES SUBSUMED INTO GST

• Central Taxes

Central Excise duty (CENVAT) v/s Additional duties of excise v/s Excise duty levied under Medicinal & Toiletries Preparation Act v/s Additional Duties of Customs (CVD & SAD) v/s Service Tax v/s Surcharges & Cesses

• State Taxes

State VAT / Sales Tax v/s Central Sales Tax v/s Purchase Tax v/s Entertainment Tax (not levied by local bodies) v/s Luxury Tax v/s Entry Tax (all forms) v/s Taxes on lottery, betting & gambling v/s Surcharges & Cesses

ONE NATION, ONE TAX

- Different tax structure in different states, area based exemption haven't worked for the trade and the industry.
- Distortion caused by
  a) CST
  b) Other interstate taxes like Octroi Duty
  c) CVD & SAD

Why a third tax in the name of IGST?

It is important to understand how inter-State trade or commerce is being regulated in the present indirect tax system. It is significant to note that presently the Central Sales Tax Act, 1956, regulates the inter-State trade or commerce (hereinafter referred to as "CST"), the authority for which is constitutionally derived from Article 269 of the Constitution. Further, as per article 286 of the Constitution of India, no State can levy sales tax on any sales or purchase of goods that takes place outside the State or in the course of the import of the goods into, or export of the goods out of the territory of India. Only the Parliament can levy tax on such a transaction. The Central Sales Tax Act was enacted in 1956 to formulate principles for determining when a sale or purchase of goods takes place in the course of inter-State trade or commerce. The Act also provides for the levy and collection of taxes on sales of goods in the course of inter-State trade.

The CST suffers from the following shortcomings:

(i) CST is collected and retained by the State of origin, which is an aberration. Any indirect

tax, by definition, is a consumption tax, the incidence of which, is borne by the consumer. Logically, the tax must accrue to the State of destination with a jurisdiction over the consumer.

(ii) Input Tax Credit (hereinafter referred to as ITC) of CST is not allowed to the buyer, which results in cascading of tax (tax on tax) in the supply chain.

(iii) Various accounting forms are required to be filed in CST, viz., C Form, E1, E2, F, I, J Forms, etc. which add to the compliance cost of the business and impedes the free flow of trade.

(iv) Another negative feature of CST is the opportunity for "arbitrage" because of the huge difference between tax rates under VAT and CST being levied on intra-State sales and inter- State sales, respectively.

The IGST model would remove all these deficiencies.

IGST is a mechanism to monitor the inter-State trade of goods and services an d ensure that the SGST component accrues to the Consumer State. It would maintain the integrity of ITC chain in inter-State supplies. The IGST rate would broadly be equal to CGST rate plus SGST rate. IGST would be levied by the Central Government on all inter- State transactions of taxable goods or services. IGST model introduced by India is the first of its kind in the world.

GST-FEATURES

- Dual GST having two concurrent components
  (I) Central GST levied and collected by the Centre
  (II) State GST levied and collected by the States
- IGST (CGST + SGST) applicable to:
  (I) Inter-State supplies of goods / services in India
  (II) Inter-state stock transfers of goods
  (III) Import of goods / services
  (IV) Export of goods / services (if made on payment of GST under claim of rebate)

GST FEATURES

- IGST levied and collected by the Centre
- All goods or services likely to be covered under GST except:
  (I) Alcohol for human consumption-State Excise + VAT
  (II) Electricity - Electricity Duty
  (III) Real Estate - Stamp Duty + Property Taxes
- Petroleum Products to be brought under GST from a later date on recommendation of GSTC
- Tobacco Products - Central Excise
- GST Rates – based on RNR: Four rates
  (I) Merit rate - essential goods or services
  (II) Standard rate - goods or services in general
  (III) Special rate - precious metals
  (IV) Nil rate - exempted goods or services
- All goods or services likely to be covered under GST except:
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  (III) Special rate - precious metals
  (IV) Nil rate - exempted goods or services
- Floor rate with a small band of rates for standard rated goods / services for CGST & SGST
- Optional Threshold exemption in both components of GST
- Optional Compounding scheme for taxpayers having taxable turnover up to a certain threshold above the exemption

- ITC of CGST for CGST & SGST for SGST - no cross utilization
- ITC of IGST allowed for payment of IGST, CGST & SGST in that order
- ITC of CGST allowed for payment of CGST & IGST in that order
- ITC of SGST allowed for payment of SGST & IGST in that order

GST- CORPORATE PERSPECTIVE 1

- Elimination of CST & Entry Tax will
  - lower prices and expand the demand
  - Warehouse and transportation cost will come down.
  - Supply chain
- Reduction in cascading
  - Lower prices and more economic activity
  - No export of taxes, more competitive
  - Level playing field for import, CVD & SAD

GST- CORPORATE PERSPECTIVE 2

- Advantage to manufacturing sector
  - Bias against manufacturing sector will be corrected
  - More investment in manufacturing sector
- Formalization in the economy
  - Invoices from registered dealer to be in chain
- Working Capital – IGST, Exemption, etc.
- Anti profit measures.

GST- CORPORATE PERSPECTIVE 3 (Compliance)

- Need to upload invoices, every transaction with invoice/challan
- Tracking movement of goods- e way bill
- Returns of different types and ledgers
- Linking credit to payment of supplies
- Purchase from unregister buyers, reverse charge basis.

GST CHALLANGES

- Multiple statutes and registration
- The value of goods will come down, services may cost more?
- GST council –example of Indian federalism
- Inflation, higher cost for small trader, incentive to evade for end consumer and administrative structure are concern.

GST – GAME CHANGER

- Removes cascading of taxes, one market
- Prices will come down and demand may increase
- Boost to capital market
- Reducing logistic cost
- Cost to pay tax may come down
- Export will be more competitive
- Higher GDP growth
- Higher tax collection including INCOME TAX.

27th AGM of ASMECHEM Chamber of Commerce & Industry of India

27th AGM of ASMECHEM Chamber of Commerce & Industry of India as well as Keynote Address on 'Post GST Impact and Benefits' & 'ECGC Services to Indian Exports'.

The AGM was organized on September 28, 2017, at 5.00 p.m. by ASMECHEM Chamber of Commerce & Industry of India, Mumbai jointly with ECGC LIMITED (a Government of India Enterprise) at the Roop Leela Bungalow at K.K. Ganguly Marg, Juhu Tara Road, Santacruz (West), Mumbai 400 049.

The timing will be from 5.00 pm onwards followed by Dinner.

ASMECHEM Chamber of Commerce & Industry of India in continuation of its capacity building initiatives, organized a keynote Address on "POST GST IMPACT & BENEFITS" & ICGC SERVICES TO INDIAN EXPORTERS".

Mr. Mihir Ajit Shah, Consultant & Advisor on GST and Trainer on International Business was invited to the event. Also the Proprietor of M/s Universal Connections, Mumbai, he is well versed with the subject as he delivered the Keynote Address wherein he covered various issues and glitches encountered by members when making the GST payments followed by a Question and Answer session.

Support Partner: ECGC LIMITED (a Government of India Enterprise), Mumbai. The Session was conducted by Mr. Anand Singh, Regional Manager, EXPORT CREDIT & GUARANTEE CORPORATION (ECGC), Mumbai and Mr. Y. Sudheer, Branch Manager, Mumbai.

To be added:
Mr. Mihir Shah's article on new FOREIGN TRADE POLICY and article on Post GST. (COPY ENCLOSED).

A Note on Vapi Industrial Estate

- Satish Zaveri

Vapi GIDC (Gujarat Industrial Development Corporation) has completed 50 years recently. Out of the entire lot of industrial units, about 30 units had started in 1968; only a few of them are still in operation.

In 1968, Vapi was sleepy town with a population comprising less than 50,000. Most of the land acquired by the GIDC was grassy land. There was only one factory at that time, namely 'Aegis'.

In 1968, when the GIDC developed the 1st Phase of Vapi Industrial Estate, about 30 units, mainly built by technocrats had come up. The Govt. of Gujarat was very keen for the industries to come up and therefore, provided proper infrastructure like water, electricity and roads. The officials of the GIDC were extremely co-operative and there was an extremely friendly relation between the GIDC and the units at Vapi. The Chairman at that time was Shantilal Zaveri, an industrialist and the Chief Executive Officer was Mr. Patankar. Both of them regularly visited Mumbai and Vapi to interact with the industry and solve the problems.

The GIDC officials at Vapi were also extremely co-operative. Bank of Baroda was only bank and since Vapi was an upcoming estate, the Manager and the officials of the bank also were very friendly.

Most of the entrepreneurs were technocrats with very little capital, but the encouragement from the then Gujarat Government helped them overcome financials limitations. The land was procured at only Rs. 4/sq. mtr (today Rs.10, 000/sq. mtr.), and even that money was to be paid in 12 years. GIDC granted a loan at 4% rate of interest and the loan amount was to the extent of 90%. Banks which had just been nationalized came forward to help the industry by sanctioning quick loans and extended a helping hand at all stages. The typical example was when one of the entrepreneur found it difficult to create a special store for his RMs, the bank manager went out of his way to store the materials in the bank itself.

However, there were many complicated problems. Telephone services was practically not available. To make a phone call from Mumbai to Vapi would take at least 6-7 hours. There were no restaurants even in Vapi and people of the industrial units had to eat in small hutments. The GIDC then came forward and helped by engaging a cook to prepare the food in one of their offices. There were no auto-rickshaws or other facilities for travel and there was only one Tanga of Hanif which was used to travel from Vapi Station to the industrial estate. Even in the evening, people had to walk about 3km to get Hanif's Tanga and go for dinner. In those days, only one train used stop at Vapi station, namely the

Saurashtra Express, which was often delayed by 3-4 hours. To come from Mumbai by car took at least 6-7 hours as the railway bridge at Vasai was not there and the train had to come via Wada. The roads passed through jungles and were not up to the mark. It was very difficult to get rented residential accommodation at Vapi. People had to stay in small rooms with no electricity and therefore suffer from mosquito bites at night and bring up their own water to take a bath from the well.

In spite of all the problems mentioned above, life was pleasant mainly due to extremely good relations not only between the industrialists and the GIDC officials, but also due to the extremely good relations with the bank and all other Government officials. There was no question of corruption.

Today, things have changed. Tremendous progress has taken place. GIDC has gone for Phases 1, 2, 3 and 4 and more than 1, 500 units now exist at the Vapi Industrial Estate. Instead of grassy land, now Vapi has transformed to a bustling city with busy roads almost congested and all the evils of a so-called developed city are there. There are hutments with no sanitation. Crimes including murder and rape are not so uncommon. Roads are congested with cars and auto-rickshaws. The officials are no more friendly, corruption and other related problems have cropped in, the relations have become materialistic and the officials no more approachable as in the past.

But Vapi has witnessed tremendous growth and today Vapi has a large number of chemical units, pharmaceutical units, about 42-50 paper mills and packaging units as well as engineering units. Various facilities are available, including Five-Star hotels, excellent hospitals and schools, extremely good residential areas. Today many trains stop at Vapi. Trains are available round-the-clock. The roads to Mumbai and Ahmedabad are excellent and one can travel to Vapi from Mumbai in less than two and a half hours.

Vapi has come a long way and economists can be happy about its growth over the last four decades. However, during the initial phase, industrialists who had enjoyed a peaceful existence, corruption-free atmosphere and exceptional co-operation from everyone are missing the good old days in spite of facing all the problems.

ASMECHEM Chamber of Commerce & Industry of India: Participation in the CHEMSPEC India Exhibitions

ASMECHEM Chamber of Commerce & Industry of India has been regularly participating in the International Exhibition CHEMSPEC India, at the Bombay Exhibition Centre (NSE Complex), Goregaon, Mumbai. CHEMSPEC Exhibitions are the only series of events dedicated specifically to the fine and speciality chemicals market. This event brings an opportunity to the ASMECHEM members to connect with the major players in the industry from around the world.

CHEMSPEC India represents diverse sectors of the Fine and Specialty Chemical industry, such as:

- Active Pharmaceutical Ingredients (APIs) & Drug Intermediates
- Agrochemicals, Catalysts, Coatings, Contract & Toll Manufacturing, Cosmetic Chemicals/ Ingredients, Dyes & Pigments, Enzymes, etc., Laboratory Chemicals, Surfactants, Water Treatment Chemicals, etc.

Features of CHEMSPEC India:

- International pavilions from China, domestic pavilion from ASMECHEM Chamber of Commerce & Industry of India,
- Concurrent Exhibitions: ChemProtech India, HPIC India, ChemLogistics India and a special focus on Water and Wastewater Treatment.
- Onsite Conference on 6 topics such as Agrochemicals, Chemical Logistics, Chemical Process & Technology, Home & Personal Care, Surfactants, Water Treatment and Special Offer for SMEs.

CHEMSPEC INDIA has offered exclusive rate for SME companies which are members of ASMECHEM Chamber of Commerce & Industry of India to make the most of an excellent opportunity to showcase their capabilities.

Therefore, ASMECHEM Chamber of Commerce & Industry of India had been allocated a special pavilion named, ASMECHEM Pavilion, exclusively meant for the benefit of the members ASMECHEM who can take advantage of this opportunity to avail a platform under the banner of ASMECHEM at an affordable price to showcase their products and services ensuring that the products are globally connected. ASMECHEM had specially asked the organizer to allocate the subsidized * stands in “A” section keeping in view that ASMECHEM members experienced more foot fall at this location during the two-days exhibition.

The subsidized rates of ASMECHEM are as follows:
Rs. 9, 500/- per sqm + applicable taxes. This rate is at least 25-30% less than the Catalogue Price (i.e., Rs.13, 000/- per sqm+ applicable taxes)

There are 9/12/15 and 18 sqm erected shell stands available on a first- come first-serve basis. To get the best location in the ASMECHEM Pavilion, the members have to confirm in writing mentioning the specific requirement at the earliest as the number of stalls are very few.

Members are requested to avail this opportunity to get the subsidized platform of ASMECHEM to get connected globally for their various speciality chemicals and allied products.

Non-members, too, can avail stands/platform as per specific requirement in order to participate in the mega exhibition by applying for membership of ASMECHEM Chamber concurrently.

In case ASMECHEM members need any more information, please feel free to contact ASMECHEM Chamber office on Tel: 022 2493 8825/022 6123 3500/3529 or The Executive Secretary of the Chamber on Mob# 9869026672, or write to the ASMECHEM Chamber by e-mail on asmechem@uniphos.com.

Cabinet approves proposal for Amendment to the Micro, Small and Medium Enterprises Development Act, 2006 to change the criteria of classification and to withdraw the MSMED (Amendment) Bill, 2015 – pending in Lok Sabha

February 7, 2018

The Union Cabinet chaired by the Prime Minister Shri Narendra Modi has approved change in the basis of classifying Micro, Small and Medium Enterprises (MSME) from 'investment in plant & machinery/equipment' to 'annual turnover'.

This will encourage ease of doing business, make the norms of classification growth oriented and align them to the new tax regime revolving around GST (Goods & Services Tax).

Section 7 of the Micro, Small and Medium Enterprises Development (MSMED) Act, 2006 will accordingly be amended to define units producing goods and rendering services in terms of annual turnover as follows:

A micro enterprise will be defined as a unit where the annual turnover does not exceed five crore rupees;

A small enterprise will be defined as a unit where the annual turnover is more than five crore rupees but does not exceed Rs. 75 crore;

A medium enterprise will be defined as a unit where the annual turnover is more than seventy five crore rupees but does not exceed Rs 250 crore.

Additionally, the Central Government may, by notification, vary turnover limits, which shall not exceed thrice the limits specified in Section 7 of the MSMED Act.
At present the MSMED Act (Section 7) classifies the Micro, Small and Medium Enterprises (MSMEs) on the basis of investment in plant and machinery for manufacturing units, and investment in equipment for service enterprises. The criterion of investment in plant and machinery stipulates self-declaration which in turn entails verification if deemed necessary and leads to transaction costs.

Taking turnover as a criterion can be pegged with reliable figures available e.g. in GST Network and other methods of ascertaining which will help in having a non-discretionary, transparent and objective criteria and will eliminate the need for inspections, make the classification system progressive and evolutionary, help in overcoming the uncertainties associated with the classification based on investment in plant & machinery/equipment and employment, and improve the ease of doing business. In addition the amendment will provide flexibility to the Government to fine-tune the classification of MSMEs in response to changing economic scenario without resorting to the amendment of MSMED (Micro, Small & Medium Enterprises Development) Act.

The change in the norms of classification will enhance the ease of doing business. The consequent growth and will pave the way for increased direct and indirect employment in the MSME sector of the country.

GST Photo

Europe tackles plastics waste

New strategy targets recycling of more than half of all plastics packaging waste

- Alex Scott

The European Commission has unveiled its first-ever Europe-wide plan to tackle plastics waste, including waste entering the oceans. At the heart of its plan is a goal that all plastics packaging used in the region must be recyclable by 2030. The Commission also set a target to recycle 55% of plastics packaging waste-which makes up about two-thirds of all plastics waste generated in the region-by then.

Currently, less than 30% of the 26 million metric tons of plastics waste collected in Europe each year is recycled. Much of the rest is incinerated, placed in landfills, or shipped outside the region. The Commission will provide $120 million to fund innovations in plastics re-cycling, including the development of processes for making plastics recyclable and systems for removing hazardous sub-stances and contaminants.

Six European plastics recycling industry organizations, including Plastics Recyclers Europe and European Plastics Converters, say they welcome the Commission's strategy. They pledge to launch new initiatives in a bid to recycle 50% of all plastics waste-including packaging-in Europe by 2040.

Plastics Europe, an industry association whose members make new plastic, says it is committed to ensuring 60% of plastic packaging is reused or recycled by 2030.

In an attempt to reduce the number of plastic particles entering the aquatic environment, the Commission proposes restricting the use of particles less than 5 mm in size in products such as cosmetics and detergents. The Commission also proposes that oxo-plastics, which break down into small fragments in the environment, should be banned.

Europe's new plastics strategy comes on the heels of China's ban on imported plastic waste. Many European companies now have a growing plastics waste disposal problem as a result.

The EC claims its strategy will deliver economic as well as environmental benefits. Just 5% of the value of Europe's plastics waste is recovered, meaning that between $85 billion and $128 billion is lost to the region's economy every year, says Jyrki Katainen, the Commission's vice president for jobs, growth, investment, and competitiveness.

SAND MAFIA

Unregulated sand mining is a problem the world over - sometimes a violent one

- Julian Smith

Sand is becoming a scarce resource (see main story). It is also heavy and so expensive to transport. That creates an opportunity for local mining gangs; if they can mine sand in areas close to building operations, they can sell it on cheaper than legitimate suppliers.

Being part of a "sand mafia" can seem attractive because it is a low-risk, high-profit enterprise that doesn't require much specialist equipment. It is also a legal grey area. There are no coherent international laws forbidding sand mining. Where local regulations exist, they aren't always enforced, especially in remote areas. In India, for example, sand mining requires a licence, but some local governments turn a blind eye to illicit operations because they provide an income for otherwise destitute people.

The term "mafia" conjures up the idea of a well-organised group that dominates a territory. But that isn't always appropriate, says criminologist Anita Lavorgna at the University of Southampton, UK. Many groups operate opportunistically in small areas. In some cases, indudlnq in Morocco, child labour is involved.

We know most about sand mafias in India and Italy, thanks to studies of media reports and court documents by Lavorgna and Aunshul Rege of Temple University in Philadelphia. Here mafia is the right word.

In Italy, sand is simply a new strand of the traditional mafia's activities. In India, the researchers found that groups are active in 12 of the country's 29 states. They often mine other commodities such as manganese, which is used to make magnetic metal alloys, and sometimes they use extreme violence to exert control over resources. In June 2015, the burned body of a journalist who had been reporting on the sand mafia, Sandeep Kothari, was found near a railway line in Maharashtra. Repeated arrests have done little to check the trade.

There are reports of illicit sand mining in Morocco, Algeria, Vietnam, Malaysia and Indonesia, and studies suggest it goes on in at least 70 countries. It's difficult to get a handle on the size of the illegal sand trade globally. But reports suggest that about 900,000 tonnes of sand were illegally mined around Delhi in a single year. We also know there is a gap between the official figures for sand imports and exports worldwide. That suggests much activity is slipping through the authorities' hands. "My feeling is that there might be a lot more going on, but it is not known about," says Lavorgna. that react to produce a filler.

Still, even if self-healing concrete becomes a reality, structures will eventually become too badly cracked to repair. Once that happens, we can try a different strategy for reducing sand demand: concrete recycling. This already happens to some crumbling structures, which are cut into blocks and ground into aggregate that can be mixed into concrete in place of sand. The resulting material is even better than regular concrete for low-grade applications like road bases. But regulations prevent it being used in critical structures like bridges. Plus, there is only enough used concrete in worldwide demolition waste to satisfy about 20 per cent of the aggregate needs of the developed world.

So if we can't repair concrete perfectly and we can only recycle so much, can we replace the sand with something else? The Romans made concrete with volcanic ash or a common mineral called pozzolan instead of sand, for example. More recently, we have tried out other options, from sawdust to sediment trapped by dams.

These generally involve trade-offs, however. Concrete made with sediment has only a fraction of the strength and durability of concrete made with virgin sand. The same goes for sawdust; you can only replace about a quarter ofthe sand in concrete before the material's strength suffers.

Perhaps we need to go further and change the way we build entirely. Concrete structures typically have angular shapes with internal steel frames for support. That brutalist approach is hardly frugal in terms of material, but a new wave of architecture might change that.

Blocks by Block

The technology that underpins this change is 3D printing. Over the past few years, building firms have developed robots that can print concrete structures quickly and easily. Take San Francisco-based firm Apis Cor, which in 2017 printed the walls of a test house in Russia in 24 hours.

Printing concrete allows architects to experiment with innovative building shapes, some of which may use less concrete. But printed concrete is only suitable for certain structures at the moment, says Paulo Monteiro, an environmental engineer at the University of California, Berkeley. That is because the boundaries between layers introduce weak points.

Concrete panels cast in a mould don't have that problem, but they must be cleverly designed to save space and weight. This is the specialty of architectural researcher Philippe Block at the Swiss Federal Institute of Technology in Zurich. His idea is to build structures from blocks that fit tightly together and support each other in compression. That means the concrete panels can be thinner, which in turn means less sand is needed.

The results can be striking. One example is the Armadillo Vault, a 1s-metre-wide dome built from some 400 limestone blocks for "To consume less sand, we may need to entirely change the way we build" the 2016 Venice Biennale arts exhibition (see photo, below). Block designed the structure so it would support itself without any adhesives.

It doesn't have to be limestone, though. One of the group's more recent projects is a new take on the most pedestrian part of a building, the floor. The Block floor consists offive interlocking pieces of concrete laced with an organic-looking pattern of internal ribbing. Again, the arched panels are designed so that compressive forces hold the floor up, like the ceiling of a cathedral, which eliminates the need for internal steel rods.

The result is only 2 centimetres thick and up to 6 metres across, and uses 70 per cent less concrete than a conventional floor. As a bonus, the space saving means there is plenty of room left over to fit heating and cooling pipes or wiring.

The Block floor is made using a 3D printing process that fuses together successive layers of fine powder to create a final form. This method is highly precise, but the printed materials are relatively weak.

A technique called FreeFAB, developed by the European construction firm Laing O'Rourke, could potentially solve that problem. FreeFAB uses a large robotic printer arm that spits out a specialised wax to make detailed moulds that are then used to cast concrete panels. It is a fast process and the material from the moulds can be reused. The method is already being used to produce concrete panels for the Crossrail project, a 100-kiiometre railway line being built underneath London.

Switching to Block-style concrete building would lower our demand for sand, but lots of real-world iteration and testing must happen before we get to that stage. So perhaps in the meantime it is worth at least trying to firm up the rules on sand mining. A few international conventions touch on sand but they aren't coherent, says Peduzzi. That is why Liu and his colleagues recently called for a global governance system to be set up for sand.

The first crucial step would be to find out how much sand there is and where it lies. Then we could start talking about where extraction can continue and at what level. In other words, we need a global sand budget. "So far research is scattered and fragmented - there's no complete picture," says Liu. Developing such a picture is something the international community needs to take seriously, Liu says, and soon. It is time to take our heads out of the sand before it disappears from around them.

Julian Smith is a writer in Portland, Oregon

Scientific Co-operation between the UK and the EU: It's time to talk

The time has really come to maintain a co-operation between the UK and the EU for the sake of scientific pursuit of knowledge.

With the UK's exit from the European Union (EU), it is clear that Theresa May, the UK Prime Minister (PM) wants to control the UK immigration from the EU nations by leaving the single market, thereby ending a commitment to freedom of movement. Thus raising questions over how collaboration between the British and the EU scientists on EU-funded research will continue unhindered and how new border controls will affect the arrival of overseas scientists to the UK.

There is a robust optimism that a deal can be worked out to continue joint research and that a new immigration system can keep talent arriving to the UK so as to ensure that science in the UK thrives after Brexit, a UK government priority.

May's comments hints at a future research relationship. She said, “There may be ... European programmes in which we might want to participate. If so... it is reasonable that we should make an appropriate contribution [to EU funds]… We will also welcome agreement to continue to collaborate with our European partners on ... science, research and technology initiatives.”

It is crystal-clear that May is open to an “association agreement” to retain links with Horizon 2020, the €80 billion EU research fund, which would imply carrying on paying into the fund, but would allow the UK scientists to apply for grants and work on the EU-funded research. Altogether, 16 non-EU countries are associates; some of them have not signed up to freedom of movement.

There are, of course, the non-EU projects, such as those run by CERN and the European Space Agency, where involvement will carry on regardless. But, we have to accept that many see benefit in continued involvement in the 3% of the UK R&D that relies on the EU.

Nevertheless, the UK's interest in an association agreement, there seems no logical reason why our scientific relationship with the EU should change. Yes, the other EU states must agree to it, but would they exclude a nation with five of the world's top 20 universities or that has produced more Nobel laureates in science and medicine than any other EU member?

As the UK takes back control of immigration, it will need to mitigate the impact on science and develop a strategy to maintain the inward flow of researchers and academics. Thankfully, there is evidence to suggest this does not require open EU borders. A 2012 study showed that states with strict controls, such as Australia, the US and Canada, recruit a greater (percentage of foreign researchers than the UK, France and Germany.

It may require innovative solutions, such as a simplified fast-track visa for researchers or the removal of genuine overseas students from immigration statistics, but the UK can continue to recruit the brightest and best minds from across the globe.

Coral reefs around the world endangered by plastic waste

Contact with plastic dramatically increases the disease for coral reefs.

- Katherine Bourzac

Coral reefs across the globe face a threat for their very existence from overfishing, climate change, nutrient runoff and ocean acidification. Now researchers have added another hazard to the list: plastic waste. In a survey of reefs in the Asia-Pacific region, marine biologists found that contact with plastic garbage increased corals' risk of disease from 4 to 89%, to be precise.

Researchers and environmentalists have been sounding the alarm bells about the 4.8 million to 12.7 million metric tonnes of plastic which find their way into the oceans every year. Douglas Rader, chief oceans scientist at the Environmental Defense Fund and one of the study's co-leaders said that the strong connection between coral disease and plastic was extremely surprising. “This is striking, particularly in the context of all the other risks to reefs,” he said.

The plastic waste study, an international effort involving researchers from the Cornell University and collaborators in Indonesia, Hawaii, and Australia, examined 159 reefs in Myanmar, Australia, Thailand and Indonesia. Researchers looked for signs of disease, including bands of necrotic tissue on the corals. They also noted whether the corals were in contact with pieces of plastic, 50 mm in diameter or larger. Courtney Couch, a coral disease ecologist at the Hawaii Institute of Marine Biology who surveyed reefs in Indonesia, said that she saw many corals wrapped in plastic fishing lines and plastic bags.

Although the researchers didn't establish a mechanism to explain the correlation, Couch observed that plastic can carry pathogens. Plastic also can wrap around coral, which causes stress and leaves the organism vulnerable to infection.

Tracy Mincer, the Marine Chemist of the Woods Hole Oceanographic Institution, who said that he read studies about plastic in the ocean with a pinch of salt, is convinced today. “It is a lot of work to do these surveys, and the increased disease susceptibility is a big signal,” he said. The study opens the door to further research on the marine-plastic microbiome and its effects on ecosystems, Mincer added.

Clean Coal: The future raw material for the Chemical Industry

- Dr. Stan Higgins

Doris Neukirken wrote the following in Process Worldwide in 2007: Whether coal, gas or even biomass will replace petroleum as the chemical raw material of the future is not yet clear. However, one thing is certain. Alternatives will be needed in the long term despite the fact that even pessimists predict that oil will be available for the next forty years. High prices, increasing consumption in Asia and the chaotic political situation in the oil producing countries add an element of urgency to the discussion on diversification of the raw material base. The industry is looking for an intelligent mix and an evolutionary approach to the supply of raw materials.

The chemical industry reportedly uses about 2% of the global annual oil production while so many companies are researching for alternative feedstock. Experts contend that 10 years later, in 2017, the chemical process industry is still at the crossroads. Moreover, the uncertainty has been overcome as we look to the USA with its shale gas reserves coming into play which is further clouding the future outcomes.

Despite these efforts, the use of bio-resources to make the chemicals needed by society has not yet had a significant impact. Nor has the use of municipal solid waste as a raw material. Both have been shown to be useful for the manufacture some basic solvents. What is more the technologies clearly have excellent outcomes in terms of climate change; but they are but a tiny drop in the ocean in the global petrochemical & chemical markets. Even the best of new technologies find it hard to be financially viable in the light of the fall in the price of oil (and related gas price) in recent years. The so called "valley of death" in the technology innovation pathway has for this reason become somewhat deeper.

Cellulose, Lignin and Glycerine all have their proponents as industrial feedstock which can be utilized with new technologies such as ionic liquids, enzymatic transformation as well as heat intensive processing to create so called “synthetic” gases. Meanwhile more recent developments in pyrolysis techniques have enabled the conversion of MSW, Agricultural waste and Biomass to useful products. However, none of these have yet been scaled to provide industry wide alternatives products suitable for high through put bulk chemical manufacture.

As an alternative and because it has large coal reserves, China has been improving new coal liquefaction and gasification technologies in order to reduce its dependence on oil. Furthermore, processes developed before the Second World War have also been used for coal liquefaction in Germany and South Africa. The Fischer-Tropsch process converts coal to synthetic gas which can be liquefied for use as fuel or as a raw material in the chemical industry.

The collection of carbon dioxide from power generation and chemical manufacture is also a potential raw material for the industry if the thermodynamics of the conversion of C02 to useful products can be overcome. Work is already underway to convert C02 chemically to carbonates and cyclic carbonates which are useful in batteries and plastic technologies. Alternatively, the use of cheap energy sources to reduce the gas with hydrogen to alkanes and indeed photo-synthetically in artificial “leaves” is already described in the literature. These are all futuristic opportunities for supplementation of the chemical raw materials.

The biggest opportunity to supply the chemical industry with the carbon it needs may in fact be the combination of these technologies - gasification of coal and carbon dioxide capture, what is now being described as “Clean

Coal". This requires gasification of coal deep underground to manufacture synthetic gas, then returning any carbon dioxide made during this activity (and in the processes in which the syngas is used) to the coal fields where the original gasification took place. As an alternative, any carbon dioxide produced can be put to use as raw material for products described above or sent in to other underground storage areas such as deep sea water (saline) aquifers. Most of the carbon extracted as synthetic gas in the chemical industry will be locked into products like polymers and construction materials.

Clean Coal also has the potential of supplying the UK for example with all its energy as well chemical industry raw material needs. The UK lies on some very big coal reserves; remarkably the British Geological Society and Coal Board surveys have shown that in the "Durham" coalfield alone has the potential to supply the UK with all its carbon needs for over 10,000 years.

A recent industrial study carried out by the North East of England Process Industry Cluster (NEPIC) has identified the medium to long term need for the UK chemical industry to find alternative raw materials. In its study of 46 companies based in the Tees Valley, it showed that there is a large potential to use synthetic gas from coal as their basic raw material. The cluster is proposing to Regional and National Government that a Clean Coal Pilot plant be built in the region to prove the synthetic gas supply techniques. Investors need to know the cost of engineering scale up, cost of production and the stability and quality of the gas supply. The technology proving step has to be done in the local coal field. The chemical industry believes that the technologies to be tested are neither in the R&D, nor innovation phase they are industrially available and just need proving in the field. The Cluster contend that their proposal has to be considered as a collaborative infrastructure development project, the results of which could underpin the UK manufacturing industry for many years to come. The NEPIC members would be prepared to take responsibility and provide leadership for such a project. Other investors are also being sought.

(Dr. Stan Higgins is the CEO of the Northeast of England Process Industry Cluster (NEPIC), a leading European Cluster for the chemical process industries. NEPIC and ICC work closely on business development projects. The opinions expressed in this column are those of Dr. Higgins' alone.)

SUSTAINABLE INNOVATION

- Dr. S. SIVARAM
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The global market for chemicals is expected to grow to about US$ 6 trillion by 2035 with Asia accounting for more than 60% of this market. The Indian market is likely to exceed US$ 200 billion by 2020 and is growing by a healthy 10% per annum. The centre of gravity of demand is shifting to emerging economies while the source of supply will shift to those who have feedstock advantages; this implies great opportunity for India and must be the ground for great optimism for the chemical industry, especially, in emerging economies like India, Yet one finds the level of enthusiasm subdued and investments on ground, lacklustre. Are we ceding our domestic markets to manufacturers elsewhere? Under these circumstances, is there an “innovate and make in India” strategy that makes sense?

Innovation requires us to understand the future consumers that we will serve. It also requires us to understand the contours of change and discern the weak signals of future change. Mere extrapolation of the present will not suffice. Many issues confront humanity today and their solution is possibly more relevant to the emerging economies than mature economies. As Einstein once said, “We cannot solve tomorrow's problem with the same thinking we used when we created them.”

We have to develop an entirely new perspectives on innovation. While learning from others, India has to develop its own approaches and processes for innovation. We have to shun excessive short-termism; the pressure to deliver strong short-term results has increased in the last five years and companies are increasingly using short-term horizons in their strategic planning.

We need to find ways to insulate innovation from the economic cycle. Conventionally, investment flows in times of plenty and taps go dry when the down-cycle comes. Budgets are slashed, labs are closed and talented workforce are reassigned or laid off. This leads to organizational scepticism and resistance to future innovation initiatives. These are disruptive forces that are inimical to the culture of innovation.

There is a strong case for creating a new strategy for sustainable innovation for Indian enterprises, innovation that creates new markets, new business opportunities, new technologies and new solutions. Most global companies talk about partnerships with academia, alliances, mergers, acquisitions, customers, suppliers and new hires as opportunities to enhance their innovation potentials. However, often these are informal, haphazard and unstructured. New hires often find themselves constrained in a culture resistant to new ideas. Looking for new business ideas in academic laboratories is like searching for a needle in a haystack, highly inefficient. Customers and suppliers only provide a short-term perspective to growth. Most Mergers and Acquisitions (M&A) tend to be in the comfort and familiarity zone of the company. Most often partnership evolves too late in the innovation process, not early when one is exploring opportunities.

Indian companies must resist blindly following this path.

We need a new breed of “Innovation Enablers” to facilitate the exchange of sensitive information among companies while protecting the company's commercial interest. For resource and competency- constrained Indian companies more co-operation and sharing of information may be a better strategy for driving innovation.

In short, we need a shared model of innovation.

Models of innovation emerged in the western world over a century of practice. Not all of them are now relevant as evidenced by the innovation deficit that we are witnessing today. The natures of the problems that confront us today are also different. India has a unique latecomer advantage in the sense that we do not have an overbearing legacy, which require unlearning and relearning. We can learn from the mistakes of others. We have an opportunity to write a new book on sustainable innovation, consistent with our culture, values and the needs of the society, which we aspire to serve.

Israel and Pune District

- *Y. H. Gharpure

Israel is a country as small as Pune district vide table below:
TABLE:
PUNE DISTRICT AND ISRAEL STATE COMPARISON

ITEM	ISRAEL	PUNE DISTRICT
Area (Sq. Kms)	22,072	15, 643
Population (lakhs)	77	94.27
Average Rainfall (mm)	435	700*
Agriculture Land (hectare)	4,37,000	12,22, 000
Irrigated Land (hectare)	1,62,000	2,70,000
Unirrigated Land (hectare)	1,38,000	9,52,000
Availability of Water (TMC)	65.3	162
Rivers	Jordan	Bhima, Neera, Mula, Mutha, Pushpavati, Krushnavati, Kukadi, Meena, Ghod, Bhama, Andhra, Indryani, Pavna, Ambi, Mose, Shivganga, Kanandi, Gunjavati, Velvandi, Karha, etc.
Water Managerment	Makeraat (Pvt. Co.)	Maharashtra State Irrigation Department
GDP	US$ 244 billion	US$ 20 billion
Per Capita GDP	US$ 32,400	US$ 2, 120

Source: wikipedia.org/wiki/Pune_district

* In 2015, between June and September, Pune district had 77.6% of normal rainfall i.e. around 532 mm of rain which is still higher than that of Israel's normal

As can be seen from the table, in terms of area and population, the two are comparable except that Israel is slightly bigger in area and Pune district is slightly larger in population but Israel's GDP is 12 times that of Pune District and per capita GDP 16times.

Israel has only one river, whereas Pune district not only has almost 20 and odd rivers but most of them have dams named as follows:

Yedgaon (Kukadi), Pimpalgaon (Pushpavati), Manikdoh, Meena (Meena), Dimbe (Ghod), Chas-Kaman and Ujani (Bhima), Andhra (Andhra), Valvhan (Indrayani), Pavna (Pavna), Mulshi (Mula), Temghar, Khadakwasla (Mutha), Varasgaon (Ambi), Panshet (Mose), Chapet (Kanandi), Bhatgar (Velvandi), Devghar, Veer (Neera).

Further, Israel gets just 2/3rd of the rainfall of Pune district. Even then, Israel is not only self-sufficient in agro products but even exports them. This has to be appreciated, particularly, since Israel has only 1/3rd of agricultural land as compared to Pune district. Further, irrigated land in Israel is 2/3rd of Pune district.

(1) Agriculture in Israel constitutes 2.5% of its GDP employing directly 64, 000 people constituting 2% of the country's labour force. In 2006, 36.7% of the agricultural output of Israel was for domestic consumption, 33.9% for domestic manufacturing and 22% for direct exports of which 33% are vegetables, 27% of flowers, 16% are field crops, 15.5% are fruits other than citrus and 9% are citrus fruits. Israel is a major exporter of fresh produce and the world leader in agricultural technology. It had agro exports (fresh and processed) of US$ 2.1 billion in 2010 constituting 4.2% of total exports. Out of this, US$ 1.3 billion was the exports of fresh products and 0.8 of processed food. Israel also exported agricultural inputs (production, factors, technologies, services) worth US$ 2.9 billion.

Israel has achieved excellence in agriculture in spite of more than half of its land being in

the desert, lack of water resources and only 20% land is naturally arable. Out of 21, 000 sq. kms of land, 4, 100 sq. kms is arable. Out of this, only half is arable and much of Israel is hilly. Agro activities take place along narrow coastal strips and at several inland valleys. Water is supplied from aquifers and from the Sea of Galilee.

The Israeli Government has agricultural extension service which provides instructions and training in using applied knowledge to improve production and productivity. (2) Agro engineering is practised widely, including the use of variable frequency drive for green houses, use of high pressure nozzle systems to create micron vapour for cooling in green houses, combined heating and dehumidification at green houses, etc. Precision agriculture is being applied increasingly with use of aerial imaging and GSP systems based on satellites, enabling the generation of yield maps, soil electrical conductivity, etc.

Computer hardware and software to control automatically greenhouse water and fertilizer have been developed.

Water is a scarce resource in Israel stretching over 500 kms in length. The rainfall ranges from 800 mm in the upper north to 25 mm in the south resulting in annual renewable water resource of 5.6 billion cubic feet, 75% of which is used for agriculture. Ground water reservoirs have declined and Israel had to take to the resource of desalinated water from Mediterranean as well as increased exploitation of brackish water. Water is regarded as national asset. Water authority decides annual quota for supply of water on chargeable basis. Extensive recycling is done and recycled water costs half of that of potable water. An irrigation industry has been developed for drip irrigation (surface and subsurface), automatic valves and controllers, media and automatic filtration, low discharge sprayers and mini sprinklers, drippers and sprinklers. Israel exploited aquifer at depth of 1, 000 meters with the salinity level of 800-2, 500 ppm. Fertigation systems are routinely installed. No wonder, the Innovative Irrigation Industry of Israel has worldwide reputation and more than 80% of its production is exported. The fertilizers are delivered through the fertigation system (part pressure irrigation). Fertigation system involves laboratory analysis of soil, leaf or other plant tissues. There are fertilizer programmes for each crop and the same system provides for continuous adjustment as per requirement. Accordingly, there are more than 1, 000 formulas evolved of compound liquid or solid fertilizers.

Israel develops, produces and markets new varieties of seeds meeting farmer and customer requirements including for exports worth US$ 150 million. Agricultural extension services include water management, quality management, labour saving technologies, ecology management, etc

With all the above, Israel has converted the desert to an agricultural oasis. Israel produces 95% of its own food requirements. Israel has transformed its disadvantages such as water shortage, soil's lack of organic matter, infertility, salinity, etc., into an advantage. It is thus able to grow vegetables with high yield of 30-50 tonnes per hectare, green houses and net houses giving yields of 250-300 tonnes per hectare of tomatoes, 80-1, 00 tons per hectare of sweet peppers, etc. Israel even grows mangoes with a yield of 50 tonnes per hectare.

Productivity is the hallmark of Israeli agriculture. The farmers have grown more (26%) with less water (12%).

The productivity of some of the crops in Israel is given below:

- Wheat: 2.5 to 6.2 tonnes per hectare
- Barley: 0.5 to 2 tonnes per hectare
- Dry Corn: 17 to 22 tonnes per hectare

The yields of fruits are also good and some of them are given in the table below:

Yield of Selected Fruits 2011

Fruits	Average Yield (tons/ha)
Apples	50
Pears	35
Plums	18
Peaches	30
Table grapes	26
Bananas	65
Avocados	18
Mangoes	25
Dates	15

As can be seen from the tables above, not only Israeli farmers have good productivity in various crops like Wheat, Barley, Dry Corn, etc., but also in various types of fruits, in spite of the fact that Israel has only one river, half the Israel is desert and Israel gets only 2/3rd of rainfall of what Pune district gets. Further, Israel arable land is only 1/3rd of Pune district and irrigated land in Israel is 2/3rd of Pune District. All these have been possible due to a variety of technologies of Water Management and Crop Management used by Israel and there is a lot we can learn. No wonder, Israel is not only 95% self-sufficient in food products but also exports flowers and fruits.

Source:
1.http://www.theisraelproject.org/site/apps/nlnet/content2.aspx?c=hsJPK0PIJpH&b=3918015&ct=5345647
2. en.wikipedia.org/wiki/agriculture_in_Israel

Pic. Source :
Israel agri productivity, Israel agriculture, dailypost – India, Isreal to boost cooperation in water resource.

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India's science funding gets a marginal boost

Proposed 2018 budget prioritizes information technology and healthcare over basic science

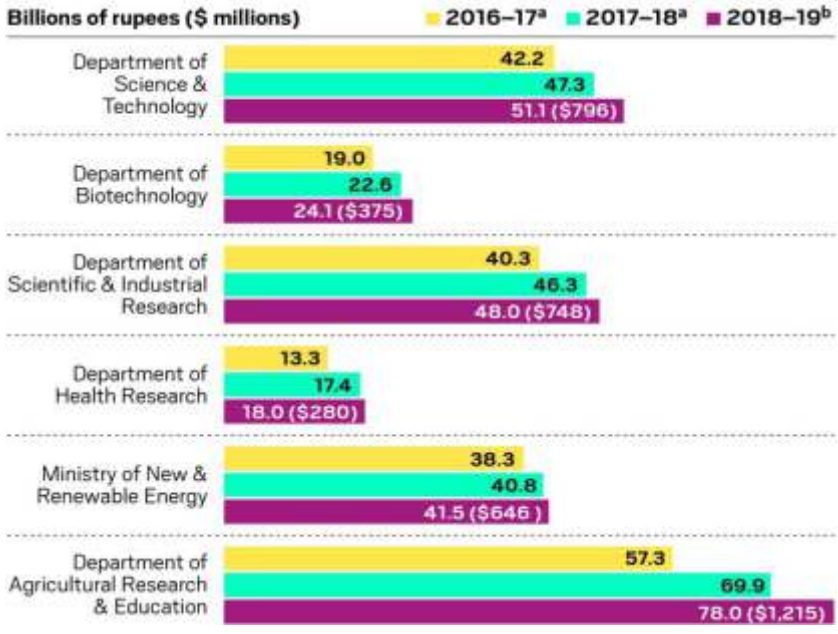
India's science and technology research programmes may see slightly increased funding in 2018-19, according to Prime Minister Narendra Modi's proposed budget. But the government is stressing on programmes aimed at information technology and healthcare rather than basic science.

In the budget proposal released on February 1, 2018, the Department of Science & Technology (DST), India's central agency for disbursement of research grants in science, got a hike of more than 8%. The Department of Biotechnology got an increase of nearly 7%. The Department of Scientific & Industrial Research saw a nearly 4% raise. And the cash-starved Council of Scientific & Industrial Research (CSIR), which runs 38 labs, is to receive slightly more than a 3% increase. India's inflation rate in November 2017 was 4.9%, according to the country's Department of Economic Affairs.

With the budget proposal, India's government announced the launch of a mission on cyber physical systems, overseen by the DST, to establish centres of excellence to train people in areas such as robotics, artificial intelligence, digital manufacturing and big data analytics. "The mission will find applications in healthcare, water management, environmental control, and other areas," said Ashutosh Sharma, Secretary, DST.

India Science spending

Although Prime Minister Modi's proposed budget shows increases for science across the board. levels likely will not keep up with inflation in same areas.



a. Actual **b.**Proposed; figures were converted from Indian rupees to U.S. dollars at the feb, 5 exchange rate of $1.00= 64.2 rupees. **Source:** India Ministry of Finance

The government also announced the Prime Minister's Research Fellowship for 1, 000 undergraduate engineering students to pursue doctorates in premier institutes like the Indian Institutes of Technology (IITs) and the Indian Institute of Science (IISc). The aim of the programme is to retain students in academia.

Reacting to the budget proposal, "The scientific community of India feels let down as none of the real necessities has been addressed," said Soumitro Banerjee, general secretary of the non-profit Breakthrough Science Society. "The director general of CSIR had declared a financial emergency last year because it had no money to fund research. The DST was unable to support research projects that were approved by expert committees. This crisis situation cannot be overcome with the level of funding provided."

The government's economic assessment for 2017-18, released the same week as the proposed budget, said that India's spending on R&D has been stagnant at 0.6-0.7% of Gross Domestic Product (GDP) in the past two decades. The assessment calls for doubling national expenditures in R&D. For the first time, a chapter titled "Transforming Science and Technology in India" was included in the report.

(Information based on K. V. Venkatasubramanian's article in the C&EN magazine published on February 19, 2018.)

ECGC: The Catalyst to Indian Exports

ECGC Ltd.
(Formerly Export Credit Guarantee Corporation of India Ltd)

ECGC Ltd. (Formerly Export Credit Guarantee Corporation of India Limited) was incorporated in 1957 in order to facilitate and strengthen India's exports by covering the risks faced by Indian exporters and their bankers. ECGC is the seventh largest credit insurer of the world in terms of coverage of national exports. ECGC is also a member of the Berne Union, an association of credit insurers, worldwide.

The Company is wholly (100%) owned by the Government of India and is managed by a Board of Directors comprising nominees of the Government of India, the Reserve Bank of India (RBI), banks, insurance companies and eminent persons from the exporting community.

ECGC's contribution in enriching the India's global trade cannot be ignored. Because of its far reaching policies and foresight, it is continuously marching on the path of advancement.

The word foreign trade denotes the exchange of capital, goods and services between two countries or across the international borders of two countries. There is a continuous risk of uncertainty and unplanned events, involved in foreign trade which may cause financial loss. Keeping all these factors in view, ECGC Ltd., was established in 1957 to promote global trade from India. To fulfill its objective of export promotion, ECGC Ltd, issues covers to the exporters engaged in foreign trade and financial institutions (banks). It works under the administrative control of MOCI.

Export Credit Insurance and ECGC

Exporters doing their business on credit terms, often have to face the risk related to payment delay or non-payment. The objective of export credit insurance is to create a positive environment for the exporters and banks in which exporters can do their business without any fear and banks can extend the credit liberally.

Activities of ECGC

ECGC's customers consist of exporters, banks / financial institutions. The insurance cover issued by ECGC can be divided into short term cover and medium and long term cover. The covers issued by ECGC to its Exporter Clients consist of declaration- based, exposure-based and consignment covers, whereas for banks / financial institutes, the covers issued by ECGC include fund-based (packing credit and post shipment), non-fund based (surety cover) and special schemes (line of credit and buyers credit). Risks covered by ECGC Ltd include commercial risks (buyer / bank's default, insolvency, abandonment and insolvency and default of LC opening bank) political risks (war, civil war, transfer delay, import restrictions). The covers issued by ECGC to financial institutions include insolvency and default by exports. ECGC has 20 short term covers (products) for more than 8, 000 exporter clients and it has issued around 13, 000 insurance covers till date, whereas for its banker clients, it has developed 11 insurance products and it has around more than 40 banks issuing more than 4, 000 whole turnover covers to bank branches which covers more than 15, 000 exporter accounts. Besides this, 22 banks and more than 50 exporters are covered under MLT covers issued by ECGC. It has classified the 237 countries under seven-fold classifications on the basis of the political and economic conditions of the countries, which was updated from time to time and uploaded in ECGC's website regularly. The policy holder exporters and bank can access this from the website of ECGC as and when they need it. ECGC maintains a defaulter buyers' list, which can prove to be very helpful to the exporters and banks.

ECGC extends its services from 60 branches spread all over India. Those in need can visit their nearest branch to avail the services.

Indian Agriculture

Innovative, Progressive, Competitive, Vibrant and Very Different

S.Ganesan, Archana Nair
UPL Ltd, Mumbai, India

It was Elizabeth Noelle Neumann, a German political scientist (1916-2010) who introduced the **"spiral of silence"** theory that explains the formation of public opinion. Her theory elucidates how one's opinion on a subject often depends on the opinion of others in the society. According to Neumann, a bandwagon effect occurs when one side of an issue is more aggressive and causes the opinion surge in popularity. As a broad majority starts to believe in a certain viewpoint, the remaining minority- however well informed- tend to fall silent allowing the predominant view to gain further grounds and emerge as the norm. Neumann's **"spiral of silence"** theory helps us understand the widely held pessimistic public opinion about Indian agriculture. The propagated pessimistic perception about Indian agriculture is that it is *primitive, backward, sluggish, unenterprising and a major drag on economic growth.* Strong vested interests in India have so aggressively articulated this perception in the public domain that it has got etched in the minds of the people. Alas, the truth is just the opposite as we explain in this article with empirical evidence.

Understanding agriculture

The Merriam-Webster's dictionary defines agriculture as "the science, art or practice of cultivating soil, producing crops and raising livestock and in varying degrees the preparation and marketing of the resulting products". While the term science is well understood, very few understand the term "art" in relation to agriculture. Art is the expression of human creative skills and talents, often shared among the people of a given society and heavily influenced by cultural context. While the science remains the same universally, the art is not. This explains why agriculture differs vastly among countries and very often within the same country from one region to another. Therefore, it must be understood that any sort of "one size fits all" approach will never work in the area of agriculture.

Asia and agriculture

According to historians, agriculture first developed in the world between 14500 and 12000 BP in Asia at the end of Paleolithic Period (Stone Age). The center of gravity pertaining to agriculture seems to have shifted again to

Asia, thanks to the "agriculture renaissance" engineered by smallholder farming systems. *"The twenty first century is and will be the Asian century"* said the Indian Prime Minister at the opening session of the "Advancing Asia Conference (Delhi, March 11-13, 2016). Asia accounts for 40% of the global economy and contribute two thirds of the global GDP growth today. What is more significant is that Asia accounts for 50% of the world's agricultural production. The average farm size in China is 0.6 hectare and in India it is 1.13 hectare - very small by western standards. Yet, these two countries have emerged as global leaders in agricultural production.

What makes Indian agriculture vibrant and very different?

Like Indian culture, agriculture in India is highly pluralistic and multidimensional. India's ecological diversity, crop diversity and diet diversity are inextricably interconnected. They symbiotically support one another, and together, highly sustainable. India is a multiproduct agricultural powerhouse. No other country grows as many food and non-food crops as India. India's small sized family farms practice a unique kind of mixed agri-horti-livestock farming. It is common in India to see agri farmers doubling up as milk producers, goat rearers, poultry keepers aqua-culturists etc. Many banana growers in India might also be producing vegetables, maize, coconut etc. India's cropping intensity is the highest in the world.

Intensification and specialization in select crops enabled productivity improvements in industrialized farming in the developed countries. Whereas in India, the volume growth in a diverse range of agricultural crops enhances the economic performance of agriculture. The domestic production of modern inputs such as high yielding seeds, fertilizers, pesticides, farm equipment and improved communication systems have immensely contributed to India becoming a global leader in agriculture.

Indian agriculture in the 21st millennia is structurally different and robust than the one prevalent during the Green Revolution era which began in 1970s. In the three decades from the 1970s until the late 1990s, India's agricultural GDP expanded sluggishly from $25 billion to $101 billion as the growth was cereals centric- mainly rice and wheat. However, between 2000 and 2014, India's agricultural production leapfrogged from $101 billion to $367 billion, driven largely by high value segments such as horticulture, dairy, poultry and inland fisheries. Indian agriculture is currently in a rapid growth phase.

> *"Since the 1980s, Indian agriculture has undergone a shift in production as farmers have planted less area to food grains and more to high-value crops. This shift coincides with strong economic growth, which has boosted incomes and, in turn, expanded consumer demand for higher valued foods, such as vegetables, fruits, milk, and some meat products. Yet, India's agricultural policies continue to follow a Green Revolution strategy developed to achieve grain self-sufficiency in the 1960s."*
> **India's Agricultural Growth Propellers** An analysis by **United State Department of Agriculture (USDA)**, April 04,2016

India's global rank in agricultural production

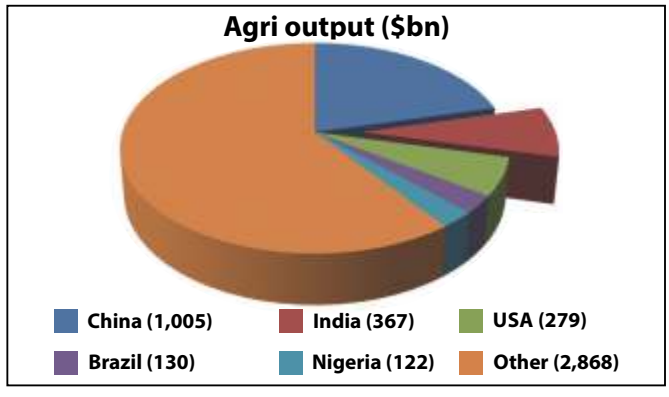
India ranks **second** in the world in agricultural output with a share of **8%.** In the year 2014, India's agricultural production was **$367** billion. In case of the much hyped services sector, India's rank is 11 with a share of 2 % in the global pie. In the manufacturing sector, India's global rank sinks further to 12th.

Sector	World output	India's output	India's Share	India's Rank
Agriculture	4771	367	8%	2
Services	49669	1185	2%	11
Industry	23857	496	2%	12

GDP values: $bn. Source: UN /IMF data accessed from www.statisticstimes.com Year : 2014

Agriculture is India's largest private sector that employs **54%** of the country's total workforce of **481 million.** It is this labour intensive agricultural sector that has taken India to global glory. The other elite sectors in India, namely the services and the manufacturing are the laggards.

Global agricultural production. The top five.



Source: UN /IMF data for the year 2014 accessed from www.statisticstimes.com

The world has nearly 200 countries. But, just the five countries, **China>India> USA>Brazil>Nigeria,** account for **40%** of global agricultural production.

Note, out of these top five global agricultural leaders, four are developing economies. This fact should be a sweet surprise to many.

In the1960s, India was dependent on supplies of food grains from the USA to tide over chronic shortages. Now, India's agricultural production is much higher than the USA.

Light, land, labour and water are essential requirements for agriculture. India has every one of these essentials in abundance. The average annual precipitation in India is much higher than China, USA, Australia etc.
As the Indian economy developed, the share of agriculture in India's GDP (at current prices) expectedly declined from more than **40%** in 1970s to around **17%** in 2014. However, in value terms the agricultural production is considerably higher now. Horticulture and livestock sectors drive the growth and account for 60% India's agricultural GDP now.

Crop Yield vs. Total Output

"If we are to compare small and large farms, we should use total output rather than yield. Total output is the sum of everything a small farmer produces: various grains, fruits, vegetables, fodder, animal products, etc.....Small farms are multifunctional, more productive, more efficient and contribute more to economic development than large farms"

-Dr. Peter M. Rosset, The Institute for Food and Development Policy, USA

Crop yield is defined as production per unit area (acre or hectare) of a single crop. High crop yields are normally achieved by input intensive industrial monoculture farming, common in western economies.

Total output, as defined by Dr.P.M .Rossette, is the sum of everything that a small holder mixed farming systems produce- various grains, fruits ,vegetables, fodder, milk, eggs, fish, meat, manure, honey, timber, etc. Total output is the real benchmark of efficiency in farming.

In monoculture, a farmer produces either crop or livestock and not both. In mixed crop-livestock holdings most common to India, farmers produce both and provide multiple agri-output of crop and animal origin. Diversity is the foundation of Indian agriculture.

Majority of the farms in India belong to the small and marginal category with holdings of less than 2 ha. Indian farmers are multi- skilled. Driven by the economic necessity to maximize the returns, these small farms have evolved through self-engineered innovation - especially over the last 15 years -into producing a variety of agricultural products round the year. Heterogeneity is the hallmark of modern farming in India. Crop mixtures, double cropping, backyard livestock farming are all the most common methods of farming. All these make Indian agriculture remarkably resilient, vibrant and less vulnerable to uncertainties.

Crop cultivation and livestock co-exist in India at the farm level, ensuring round the year economic activity. The aggregate agricultural output per unit area per year in India is among the highest in the world. Every unit of farmland in India produces multiple agricultural outputs.

India is the world's largest producer of milk. Latest estimate put the production at 146 million tons (2015). Smallholder dairy farming systems supply over 90% of India's milk production. Stovers of cereals, legumes, haulms of potato, sugarcane tops, fruits and vegetable wastes together with own farm grown green fodders form cattle feed in India.

In India, small herd of cattle and flock of chicken in the backyard are important household assets. Their milk and egg production provides daily link to the retail market, bring regular income and considerably improves rural prosperity.

India's food production/consumption is very unique:

Everywhere in the world, food production is meat centric. The world produces more "feed grains" than "food grains". For example, out of 2528 million tons of cereals produced in the world in the year 2015, the coarse grains' share was 55%. In richer countries, 70% of the grain production is fed to animals.

The average per capita consumption of meat in the world is **43 kgs** per year. In the USA, it is over **100 kgs** while inn India it is **4 kgs**/year.

India is different. Over here, "meatless meal" is most common and therefore food grains, vegetables, fruits and milk lead the food production and consumption. The coarse gains' share in India's food grains production is less than 15%.

"Food Outlook", a biennial report from the FAO on global food market does not dwell on production/consumption of vegetables and fruits at all as they are not considered to be major foods in the world at large. In India, vegetables form an integral part of every meal.

In India, the production and consumption of fruits and vegetables (256 million tons) is higher than the production of staples such as rice and wheat (198 million tons). Fruits and vegetables have a high share of 26% in India's agricultural GDP.

The Indian food market the size of which is estimated to be $312bn, one third ($101bn) is accounted by fruits and vegetables. This is followed by milk and eggs ($74bn) and cereals come a poor third ($61 bn). The share of meat is at the bottom with only $14 bn.

Indian agriculture is globally competitive

India is probably the only country where one can get one dozen banana or eggs for one dollar!

As per the latest data from WTO (2015), India ranks **19**th in merchandize exports, and **9**th in agricultural exports. This shows India's global competitiveness in agriculture. India was a net importer of rice till mid 1980s. India is now the largest rice exporter with a whopping share of 26% of the world trade. According to a recent study by USDA, India is the fastest growing exporter of agricultural products. India's share in the world's agricultural exports can easily reach 10% from the present level of 2.35% if supported by policy changes and aggressive marketing. Though China's agricultural exports are higher than India, however it is a net importer of food as its agricultural imports ($160 bn) remain higher than the corresponding exports ($73 bn).

The final word

To quote the World Bank: "India has brought about a landmark agricultural revolution that has transformed the nation from chronic dependence on grain imports into a global agricultural powerhouse that is now a net exporter of food". Indian agricultural system (mixed crop-livestock farming) is a model of sustainable agriculture for the whole world. Highlighting this unique, low cost and diverse farming system globally will help positioning India as an agriculturally vibrant economy and a leader in her own right. The poor recognition given to India's outstanding achievement in agriculture is purely on a priori grounds than on empirical grounds. This must change.

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GOODWILL GROUP:
The goodwill continues unabated...

After obtaining a bachelor's degree in Chemical Technology from UDCT, the prestigious institute, located at Matunga in Mumbai, now known as Institute of Chemical Technology, Lalit Chadha founded the 'Goodwill Group' in 1968. The Goodwill Group of comprises of the following flagship companies:

Goodwill Chemical Industries was the first Company to be established on Ghodbunder Road, Thane, which started its production on March 8, 1968 and continues to be in the production of organic intermediates. **It was the first company in India to manufacture 2:5 dichloronitrobenezene, metanitrochlorobenezene, orthodichlorobenezene, 1:2:4 trichlorobenezene, 1:2:3 trichlorobenezene, 3:4 dichloronitrobenezene.**

PHOTO -1

The success of this first venture prompted the launch of the next Company, M/s Goodwill Organics Pvt. Ltd., which was established in 1995. **This was the first company in India and the second, globally to manufacture metadichlorobenezene by the Zeolite Catalyst process.**

PHOTO -2

Lalit Chadha was rewarded with an award for the innovative technology on the National Technology Day, May 11, 2002, which he received from Shri Krishna Kant, former Vice President of India, The photograph below depicts Lalit Chadha receiving the Award and Shri Murli Manohar Joshi, former Minister of Science and Technology present during the award ceremony.

Surging ahead, the Goodwill Group later established Val Organics Pvt. Ltd, Unit 1, at Silvassa in 1997. In 2008, the second unit was established at GIDC, Sarigam through strategic collaboration with Syngenta, the global crop protection giant with headquarters in Basel, Switzerland. The Sarigam unit has been established as per International Standards and maintains a high

standard of HSEQ (Health Safety Environment & Quality) equivalent to those of units in the European region.

PHOTO -3

Val Organics Pvt. Ltd., is the only manufacturer in India for 2:4 dichloroacetophenone and 2:4 dichloro-5 –fluoroacetophenne and enjoys a monopoly in exports. Stiff competition from China has not hampered its exports since its products are well received in the US and Europe due to high HSEQ standards.

Technology and Specialization

Chlorination

Being in the field of chlorination of benzene over the last 35 years, the Goodwill Group has today mastered the technology of the same.

Nitration

With a range of its own chlorinated products, the Goodwill Group ventured into the Nitration of chlorinated hydrocarbons with world-class production technology at their Thane manufacturing facility.

The recent expansion of the range of reaction types carried out at both the production sites, has given the Goodwill Group an access to new products like Dichloroanilines, Trichloroanilines and Chloroacetophenones.

A keen focus on Quality, Research & Development

PHOTO -4

A firm commitment to Quality

At Goodwill, quality comes first, where taking pride in the production of the highest quality standards through meticulous testing and corrective measures is a way of life. Backed by a strong R&D team, working on continuous improvements in technology and production standards, the Company has been setting new benchmarks in the chemical industry.

Right since inception, the Company has been involved in exemplary R&D activities, thereby becoming pioneers to start the manufacture of 2:5 DCNB in 1972 and MNCB in 1975. The Goodwill Group was the first to separate isomers of Dichlorobenzene and Trichlorobenezene of ODCB with 99.5% purity and 1:2:4 TCB with 99.5%.

It was the first to manufacture 3:4 DVNB from 99% ODCB in India. The main thrust of the organization is to go for indigenous development of technology at the R& D Centre for import substitute products. The organization is very conscious about quality standards and ensures that a high degree of its resources are directed towards competence in quality management, hygiene and safety programmes. Its efforts are rewarded with continuous success in the meeting the stringent global standards for manufacturing excellence.

Environmental Protection

PHOTO -5

The Goodwill Group is strongly committed to the environment and its preservation. Realizing the importance of pollution control and waste management, the Goodwill Group has deployed technology that supports in complying with the highest environmental standards. It firmly believes that material progress cannot come at the cost of our living world.

Corporate Social Responsibility

PHOTO -6

Realizing the responsibility towards its own community and on its road to success, the Company endeavours to make sure that not only does the community gain from its success, but at the same time it strives to give back to the society a part of the rewards that it has reaped.
At all its manufacturing locations, the Goodwill Group ensures the safety and the well-being of each and every employee by extending support to their families for wellness, education and overall development as well.

Global Partnerships

PHOTO -7

Expanding its horizons forms a major part of the strategic plan, whereby the Goodwill Group is looking forward to develop long term relationship with suppliers, customers by outsourcing clients and manufacturers. So that the suppliers and customers of the Group form partnerships to work together for improving their mutual capabilities and benefits.

The Goodwill Group remains dedicated to the task it had set out many years ago and is proud to have participated in the industrial as well as regional growth of India.

Large Client Base

Today the Goodwill Group has both multinational (Syngenta, BASF, Clariant) and Indian clients (Sudarshan, Pidilite and Gharda Chemicals) as well.

Goodwill Group: The Key People who are its pillars

PHOTO -8

Lalit Chadha, B. Sc. (Hons.) and B. Sc. (Tech), is an alumnus of the prestigious and world-renowned UDCT-Mumbai, now known as the Institute of Chemical Technology (ICT), Mumbai.
Vivek Chadha has completed his Bachelors in Chemical Engineering from the University of Wisconsin at Madison (US).
Akshay Chadha is an MBA (Finance) from England.

Highlights of the Golden Period

PHOTO -9

To have marched for all these long years along with and as part and parcel of various cultural and service oriented associations and organizations make this journey even more memorable.

This is a special year for the Goodwill Group on completing 50 golden glorious years of upholding its industrial growth. The Goodwill Group played a vital role and was instrumental in interactions with the Government bodies and other industrial groups in influencing the needs of the chemical industry and policies on taxation, levies, customs and Central Excise and administrative compliance.

The Goodwill Group celebrated its Golden Jubilee at Roof Top, the Trident Hotel, Mumbai, on February 16, 2018. Prominent industrialists, dignitaries and close friends participated in Goodwill's eventful and long journey sharing their views and feelings over sumptuous dinner and delectable cocktails punctuated with magical music melodies of Kavita Krishnamurthy. The prominent speaker gracing the memorable occasion were Padma Vibhushan M. N. Sharma and Shri Rajju Shroff, CMD of the UPL Group.

"The geographical diversification helped us de-risk our earnings and sustain our growth momentum

—RAJNIKANT SHROFF
Chairman, UPL

A BREED OF ITS OWN

Strategic overseas acquisitions and diversified revenue make UPL the best bet in the agrochem space

Rajnikant Shroff started off his business on an explosive note, literally. A 36-year-old Shroff, a chemistry graduate from Gujarat, as the R&D head at his family-owned unit was mixing various chemicals in search of a formula that would enable him to manufacture red phosphorus at low costs. Unfortunately, that exercise led to an explosion at the plant. A very worried uncle asked him to stop his risky experiment, but Shroff was obsessed about his idea. He chose to start his own venture, UPL, to continue with his dream.

In 1969, he set up a red phosphorous factory in Vapi. The Company started production with a paltry sum of Rs.4 lakh with over 25 employees. In those days, a Swedish company that went by the name of Wimco made matchboxes and used red phosphorus for its matches. When Wimco heard of Shroff's venture, it couldn't digest the news. By any measure, phosphorus production was considered an expensive energy-intensive process. Energy costs could account for as much as one-third of production. However, against all established notions, here was a small company that was producing phosphorus at a fraction of the costs prevalent in the industry.

Wimco sent a letter to the Indian government, alleging some mischief at the Vapi-based company. According to them, manufacturing red phosphorous required at least Rs. 4 crore (100 times the money Shroff had invested) and an extensive knowledge of the sector. A team of Director General of Technical Development and the National Research and Development Corporation landed at Vapi to solve this mystery. But they found nothing wrong after investigation. They sent a report to Delhi declaring the plant safe and project perfect. Far from penalising the company for its low-cost red phosphorous production, the government instead awarded Shroff a gold seal to recognise his company's R&D efforts — a first of its kind award for a small-scale factory in India. Since then, Shroff has come a long way. He went on to successfully create a low-cost manufacturing base in India and through product registrations (6,000 pesticide registrations at last count) and wide reaching distribution across the world, entered the global supply chain of agrochemicals Today, UPL is the eighth-largest agrochemical player in the world and the second

Even though UPL's business has certain seasonality to it, by diversifying into multiple geographies, the company has brought stability to its earnings

largest generic player with a turnover of over Rs.17,000 crore.

The Mumbai-based company has 33 manufacturing units across 12 countries. As many as 14 units are in India, while 19 are abroad. UPL's product portfolio includes crop protection chemicals such as fungicides, insecticides and herbicides. The Company also makes industrial and speciality chemicals, bulk of which are used for captive consumption.

Since it is 30%-40% cheaper to set up a plant in India compared to other countries, a majority of UPL's bulk chemical units are located in the country. The formulation plants that warrant lower capex are set up overseas closer to its clients. "The basic manufacturing is done in India and the last level of manufacturing is done closer to market. This hub-and-spoke distribution model ensures faster reach to markets," points out Dhananjay Sinha, Head of research at Emkay Global Financial Services.

A STEADY AFFAIR

Agriculture is dependent on the vagaries of nature. Good monsoons typically bode well for agriculture related industries such as agro-chemicals and poor rainfall works the other way round. Even though UPL's business has a certain seasonality to it, by diversifying into multiple geographies, the company has brought stability to its earnings. Overseas markets account for 80% of UPL's revenue, while the balance 20% comes from India.

In India, the peak season lasts from May to September when monsoons are in full swing. Meanwhile, the rainy season in Brazil falls in the third quarter of a fiscal year. "Different regions see rainfall at different times, which means there is a market for UPL's products round the year. Another benefit of having a large global presence is that if rain disappoints in one region, another place can make up for it. For instance, while the occurrence of El Nino will cause drought in India, it will have an opposite effect in Brazil," explains Mehul Thanawala, oil & gas and chemicals analyst at JM Financial. UPL's financial performance reflects the stability in the company's operations. Over the past five years, UPL's revenue has grown at a CAGR of 16%, while profits have grown at an average of 25.5% during the same period. *(See: In full bloom)*. During the five-year period, the domestic business has grown by an average of 14.8%, but its international business has grown at a faster rate of 17.8%, as it has successfully turned around its overseas acquisitions.

UPL has scaled up its international presence on the back of more than 25 acquisitions over the past two decades. "We were doing well in India, but after liberalisation we wanted to enter the global market as the size of opportunity was much larger. About 23 years back, we entered the world market and since then, we have scaled up without compromising on profitability. The geographical diversification helped us de-risk our earnings and sustain our growth momentum," mentions Shroff, Chairman, UPL.

LATIN PUSH

Latin America is the biggest revenue contributor, accounting for 33% of the overall revenue. Within LatAm, Brazil has the biggest share as it accounts for over 60% of sales, as per analysts' estimates. North America and Europe account for 17% and 13% of the sales, respectively.

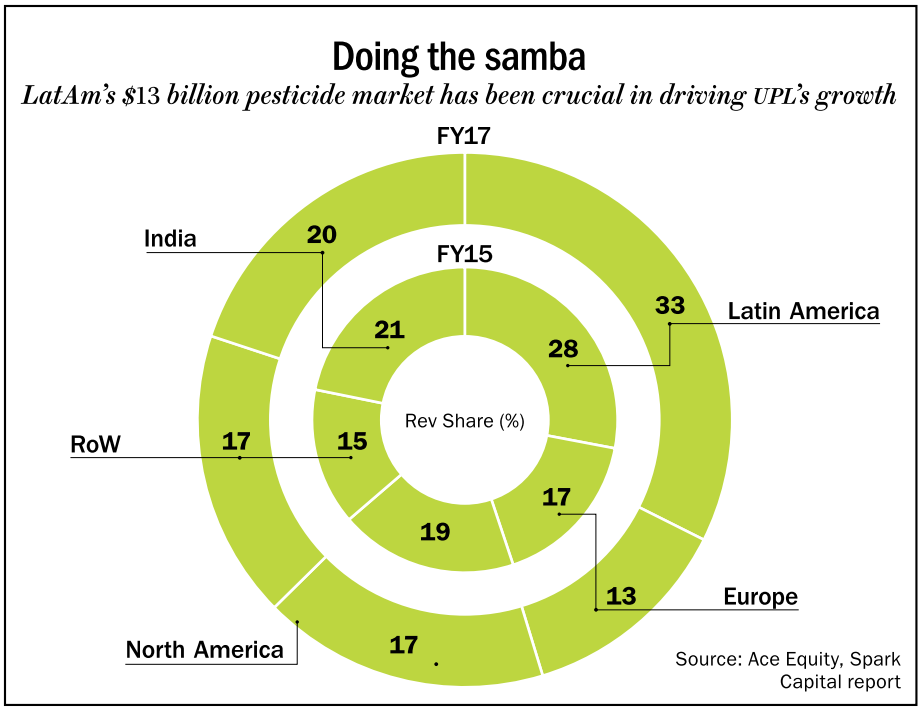
The Latin American markets have played a key role in driving the growth of the company with revenue compounding at an annual rate of 26% CAGR over the past three years. The food production in Latin America market is much less compared with India, but their consumption of pesticides is around $12.6 billion. In comparison, the consumption of pesticides in India is around $2.5 billion. Revenue from India has grown at 13% CAGR over the same

In full bloom

UPL's impressive 16% revenue CAGR has been backed by a robust return ratio

₹ Crore	Mar-12	Mar-13	Mar-14	Mar-15	Mar-16	Mar-17
Net Sales	7,671	9,186	10,771	12,091	14,048	16,312
Profit After Tax	555	774	949	1,144	940	1,727
PBIDTM (%)	18.96	18.96	19.81	19.48	18.9	20.84
ROCE (%)	16.37	16.73	18.82	21.73	18.79	21.87

Source: Ace Equity



period. Going ahead, analysts expect Latin America to be a key growth driver *(See: Doing the samba)*. "Substantial growth in the Latin American markets has come from the success of its fungicide portfolio in Brazil. An increase in fungi-resistance to established products with single mode of action has resulted in farmers adopting more of UPL's products with multimode of action such as Mancozeb," says Vishnu Kumar AS, analyst, Spark Capital.

Mancozeb is a fungicide that is used in protecting crops such as soybean from the Asian rust disease. Over the past two years, the fungicides market has grown significantly in Brazil. The fungicides market (33% of total) has overtaken the insecticides market (29%) making it the largest segment, explaining why UPL has been focussing on a fungicide in Brazil. Mancozeb contributes 12-13% to the overall sales of UPL and remains its largest revenue-generating product. As on FY17, fungicides accounted for 29% of UPL's revenue; insecticides, herbicides and seeds accounted for 23%, 29% and 10%, respectively. The rest came from 'others' category, which includes plant growth nutrients.

Of all UPL's acquisitions, the foray into Brazil has been the most rewarding one. UPL do Brasil generates annual revenue of $500 million, almost tripling its revenue over the past three years. The Company has launched 13 molecules during this period and expects good additions to its product portfolio across various crops in the foreseeable future.

In FY12, UPL bought a 51% stake in DVA Agro Brazil for $185 million to widen its presence, in the world's largest market for agrochemicals. The acquisition helped UPL gain access to DVA Agro's product portfolio (a differentiated line of post-patent crop protection agrochemicals and nutrition products) and leverage its distribution network. The acquisition had come close on the heels of UPL's buyout of a 50% stake in Sipcam Isagro, a manufacturer and distributor of formulations in Brazil in 2011. UPL management expects revenue from Brazil to touch $1 billion (doubling from FY17) over the next two to three years and I building a new agrochemical plant in the country for a total investment of $300 million over the next two to three years. The Company expects to fund the expansion with a mix of internal accruals and debt.

PLOUGHING THE SOIL

While acquisitions have been instrumental in accelerating UPL's growth (revenue grew eight-fold between FY06 and FY16), the inorganic route has not been without hurdles. The series of acquisitions took a toll on company's profitability - the Ebitda margin reduced agrochemical market to touch $1 billion, doubling from FY17, over the next two to three years from 28% in FY06 to levels of 19% during FY10-13.

The working capital also got stretched. As revenue share from the fast growing long credit Latin American markets (300 days cycle in Brazil) went up, net working capital jumped 93% to Rs. 245 crore in FY12. Since then, UPL has improved its

UPL expects revenue from Brazil, the world's agrochemical market to touch $1 billion, doubling from FY17, over the next two to three years

Analysts expect UPL's revenue to increase by an average of 14% every year over FY17-19 and profit to show a healthier 22% growth over the same period

operational performance — the net working capital cycle has reduced to 90 days. Operating margins have inched back to 20.8% in FY17.

Sinha believes UPL has been successful in improving operations of its acquired assets by getting the right people in key positions. "UPL has managed to successfully turnaround its acquisitions. Some of them were loss-making, while some were not so profitable. However, UPL has been able to integrate these businesses well and draw synergies from them. Typically, absorbing new assets take time, but UPL has done it at a faster pace. They have been able to do this by retaining executives in the acquired assets and bringing in regional talent," he says. UPL's management has kept a close watch on their acquired assets. The acquired entities had a payback period of three years with synergy effects quantified and post-acquisition profitability being continuously tracked by the CFO and his team.

UPL's first international acquisition — the UK-based MT Agrochemicals which was bought for £10.5 million in 1994 — serves as a good example of the company's ability to turnaround acquisitions. MTM had gone bankrupt when UPL had bought it. However, it had a good line of organophosphate products, rich technology and product approvals. UPL retained the British CEO of MTM and commissioned a team to turnaround MTM through prudent investments in plants, processes and people. Within 18 months, MTM reported a surplus.

The acquisition of French company Cerexagri in 2007 is another case in point. UPL reduced overheads and streamlined production across Cerexagri's factories (three in France, one in Holland and one in Italy). Besides, UPL leveraged Cerexagri's Mancozeb competence, increased the product's capacity within its Indian plants and acquired a Colombian Mancozeb unit from DuPont in 2010. "After acquiring the company, we had professors from Indian universities visit these plants and then our engineers and scientists tried to find solutions with them. This approach helped us improve efficiencies in our acquisitions," says Shroff. When the company bought the Colombian plant, it was producing Mancozeb at $3 a kilo. Today, the capacity of the plant has increased over four times but the cost has gone down to $1.8 a kilo. These initiatives enabled UP to emerge as one of the world's largest producers of Mancozeb.

SUNNY-SIDE UP

Shroff seems to have found the right formula for success. UPL is also getting benefits of a favourable environment. For instance, weak farm incomes have led farmers to down trade to branded generics "Agricultural commodity prices have been weaker which has led to lower farm incomes. When farmers' incomes fall, they tend to down trade and that is what has happened. Farmers have switched from specialty players to branded generics. UPL benefits from this trend as it may be difficult to convince farmers to up trade once they switch to a good generic product and are satisfied with its performance," says Thanawala. As much as 86% of UPL's sales come from branded generics.

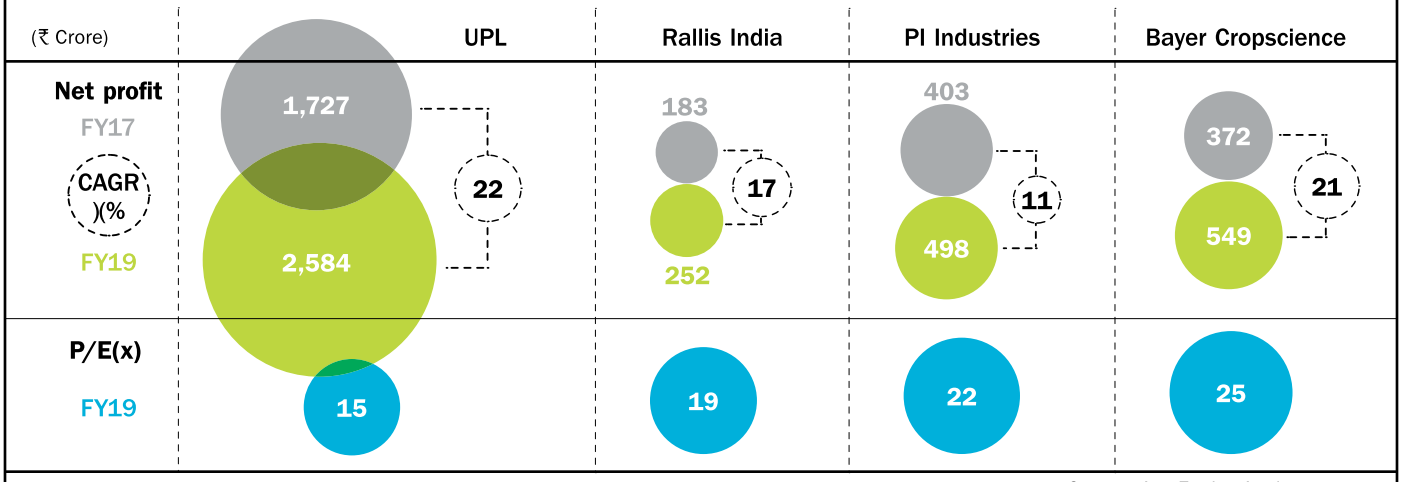
Even in a de-growing global agrochemical market, UPL has seen its market share rise from 3% in FY14 to 4% in FY17. In recent years, the crop protection chemical industry's growth was hit owing to high grain inventory levels, but that hasn't affected UPL. The company's revenue grew by 17% in FY17 even as the global crop protection chemical industry contracted 2.5% in CY16.

With more molecules going off-patent, players such as UPL stand to gain. "Molecules worth $5 billion to $6 billion are estimated to go off patent between 2014 and 2020. While innovators continue to maintain a stronghold on these molecules even after patent expiry, it eventually leads to 30-40% market share grab by generic players over a period of time. At this rate, it could lead to $2 billion of incremental opportunity for players like UPL," says Kumar.

In FY17, UPL fi led for 19 patents and registered for 427 products across 72 countries. Going ahead, analysts expect UPL's revenue to increase by an average of 14% every year over FY17-19 and profit to grow 22% CAGR over the same period. "Having a globally diversified business gives UPL a competitive edge over its

Pick of the lot

Despite being the market leader, UPL is still the least expensive agrochemical stock



Source: Ace Equity, Analyst reports

domestic peers and having a low-cost manufacturing base gives it an edge over its global players," says Abhijit Akella, analyst at IIFL Institutional Equities. The stock currently trades at an attractive 15times its one-year forward (FY19) earnings (see: Pick of the lot). Going ahead, analysts expect the company's return on capital employed (ROCE) to improve to 19-20% from its 17-18% average as asset utilisation continues to improve. They expect the stock to trade at 20 times FY19 earnings over the next 12 months, which pegs the target price at Rs.1, 020 a share. That is a 24% upside from the current market price. With a diversified product portfolio, geographical presence and a favourable external environment, UPL should continue to grow its earnings at a steady space, which makes it an attractive 'buy' at current valuation.

"The globally diversified business and a low-cost manufacturing base give UPL a competitive edge over its peers."

- Abhijit Akella
Analyst, IIFL Institutional Equities

"Different regions see rainfall at different times, which means there is a market for UPL's products round the year."

- Mehul Thanawala
Analyst, JM Financial

"Absorbing new assets take time, but UPL has done it at a faster pace by retaining executives in the acquired assets."

- Dhananjay Sinha
Head of Research, Emkay Global

UPDATE ON FOREIGN TRADE POLICY (FTP) – 2015-20

FOR ASSITANCE OF EXPORTER / IMPORTER

Commerce Minister Shri. Suresh Prabhu, announced the much awaited Mid Term Review of the Foreign Trade Policy (FTP) 2015-20 on 5th Dec 2017.

The Highlights and Important changes are given below:

A. General Points:

1. E-BRC system of DGFT will be linked to RBI developed a comprehensive IT-based system called Export Data Processing and Monitoring System (EDPMS) for monitoring of export of goods and software and facilitating AD banks to report various returns through a single platform. ***[FTP Para 1.12(e)]***

2. An effective message sending system is in placed with various stake holders like Customs, Banks and EPCs. Now DGFT will also share the data with GSTN and RBI. ***[FTP Para 1.20(e)]***

3. Total of 19 Sea Ports and 17 Air Cargo Complexes are offering 24x7 Custom Clearance. No MOT charges are required to be collected in respect of the services provided by the Customs officers at 24x7 Custom Ports and Airports. ***[FTP Para 1.25]***

4. Provision for exemption of Service Tax on Service received abroad has been deleted. Service Tax is now part of GST and thus GST provisions will apply on the same. ***[FTP Para 1.32]***

5. The FTP acknowledges the aim of ease of doing business and promoting paperless clearance, CBEC has done away with routine print-outs of several documents including GAR 7 Forms/TR6 Challans, TP copy, Exchange Control copy of Bill of Entry and Shipping Bills and Export Promotion copy of Shipping Bill. **However, hard copy of EP copy of shipping Bill/ Bill of Entry may be provided on request only** ***[FTP Para 1.37]***

6. Consequent to India's ratification of the WTO Agreement on Trade Facilitation (TFA) in April 2016, the National Committee on Trade Facilitation (NCTF) has been constituted. The defined objective behind setting up the NCTF is to have national level body that will facilitate domestic co-ordination and implementation of TFA provisions. It will play the lead role in developing the Pan-India road map for trade facilitation. ***[FTP Para 1.38]***

7. Consequent to Implementation of GST, IEC will be equal to PAN (i.e 10 Digit Alpha Numeric No.) and will be separately issued by DGFT based on the application. ***[FTP Para 2.05(I)]***

8. Details of Prohibition on Trade with the Islamic State in Iraq and the Levant [ISIL, also known as Daesh], Al Nusrah Front [ANF] and other individuals, groups, undertakings and entities associated with Al Qaida has been notified. ***[FTP Para 2.16A]***

9. Direct or Indirect export and import of items whether or not originating from Democratic People's Republic of Korea (DPRK) to/from DPRK is prohibited and will be governed as per details in Appendix – I of FTP.***[FTP Para 2.17]***

10. Exemption / Remission on Service Tax when exported from DTA and units in EOU/EHTP/STP/BTP have been deleted. Service Tax is now part of GST and thus, provisions of GST will be applicable w.e.f 01.07.2017. ***[FTP Para 2.40]***

11. Imported goods found defective after custom clearance may be re-exported back as per provisions of Customs Act, 1962. ***[FTP Para 2.50(A)]***

12. Permanent IEC Numbers to be used by 13 Non –Commercial PSUs and Categories or Importers /Exporters which were earlier accorded a 10 Digit Numerical IEC No. has been amended to PAN based IEC No. (i.e 10 Digit Alpha Numerical Nos.) These are mainly for Govt. Agencies, Diplomatic Missions, UN Officials, Personal Use, etc…

[HBP Para 2.07(b)]

13. Revalidation of Authorisation / Duty Credit Scrip is being allowed without charging any fees for **the period of delay or six months whichever is less** when delay is for following reasons:

a. If Authorisation/Scrip or any amendment thereof could not be transmitted to Customs Server within fifteen working days from the date of issue/amendment;

b. If Authorisation/Scrip rejected by Customs server with error Code;

c. If request for issue of waiver of Bond/EODC was not considered within the period specified under Para 9.10 of HBP, 2015-2020 where complete application was submitted within the validity of the Authorisation.

[HBP Para 2.20(d)]

14. Maintenance of Records for every SCOMET Authorisation Holder for period of 5 year from date of export or import is notified. Details of documents to be maintained in electronic or manual format is been prescribed.

[HBP Para 2.73(c)]

15. Provisions for Export Authorisation for "Stock and Sale" of SCOMET items and for Spare Parts of SCOMET Items is notified. ***[HBP Para 2.79(A) & 2.79(B)]***

16. Supply of SCOMET items to Military Stores which are referred to as SCOMET Category 6 items, were allowed against No Objection Certificate (NOC) from Department of Defence Production. The same now shall be allowed against **an Authorisation** issued by Department of Defence Production. The Authorisation will be governed by Standard Operating Procedure (SOP). ***[HBP Para 2.81]***

17. Time line for Comments, views, No Objection from members of IMWG has been reduced to 30 Days from earlier 45 days. ***[HBP Para 2.82]***

18. Free of cost exports for status holders is allowed with annual limit of Rs. 10 Lakhs or 2% of Average Annual Export realisaiton during preceding 3 Years whichever being lower.

Now for Pharma Exports, the Annual limit would be 2% of Average Annual Export realisaiton during preceding 3 Years.

For Govt. Supplies, Supplies of vaccines and life saving drugs to health programmes of International Agencies such as UN and WHO-PAHO, the annual limit shall be upto 8% of average annual export realisation during preceding three licensing year.

Such Free of Cost supplies shall not be entitled to Duty Drawback or any other export incentive under any export promotion scheme.

[HBP Para 2.84]

19. Procedure of Track and Trace System for export of drug formulations has been notified under the Handbook. Barcode as per GS1 Global Standards at different packaging levels are required to facilitate tracking and tracing of the product. ***[HBP Para 2.90(A)]***

20. A Scheme of Self Certification for certifying the rules of Origin under GSP has been introduced by European Union (EU) w.e.f 01.01.2017. The Registered Exporter System (REX) will help exporter to self certify by a Statement of Origin of their goods being exporter to EU. The details of the scheme are at Annex 1 to Appendix 2C.

[FTP Para 2.62 & HBP Para 2.104(c)]

21. Provisions for Application of Policy Interpretation to Policy Interpretation Committee (PRC) have been notified.
[HBP Para 2.110 & 2.111]

22. All Provisions related to Board of Industrial and Financial Reconstruction (BIFR)/Rehabilitation Department have been deleted.

B. Chapter 3 – Duty Credit Scrips

23 MEIS incentive scrips were rewared at 2%, 3% and 5%. A Broad increase of 2% in MEIS has been brought about. The increase has been made for exports made w.e.f 01.11.2017 to 30.06.2018 by way of addition of table no. 2 in Appendix 3B. For exact details, HSN wise product details must be verified.
[Public Notice 44/2015-20 Dated 05.12.2017]

24. Pre – GST Regime Chapter 3 Scrips were allowed to be use for Payment of Customs Duties (BCD), Central Excise Duties, and Service Tax. However, effective of introduction of GST, Chapter 3 Scrips can only be used for
a. Payment of Basic Customs Duty and Additional Customs Duty specified under sections 3 (1), 3 (3) and 3 (5) of the Customs Tariff Act, 1975 for import of inputs or goods, including capital goods, as per DoR Notification, except items listed in Appendix 3A.
b. Payment of Central excise duties on domestic procurement of inputs or goods, (For Non GST Products only)
c. Payment of Basic Customs Duty and Additional Customs Duty specified under Sections 3 (1), 3 (3) and 3 (5) of the Customs Tariff Act, 1975 and fee as per paragraph 3.18 of this Policy. ***[FTP Para 3.02]***

25. Ineligible categories for MEIS have been reduced from 20 to only 7. However, MEIS is granted as per 8 digit ITC (HS) with matching of description. Over 8, 000 odd line items have been included in the MEIS benefit.
[FTP Para 3.04 & 3.06]

26. The Policy has specifically notified that RA will not ask for Physical Documents namely: EDI shipping bills, Electronic Bank Realisation Certificate (e-BRC) and RCMC except for cases which are under HBP 3.01(h).
[FTP Para 3.01(c)]

27. Details of Jurisdiction for Application of MEIS and SEIS have been notified based on various categories of Exporter. This will assist the exporter to confusion of submission. ***[FTP Para 3.06 (b) & (c)]***

28. As notified earlier vide P.N.33/2015 Dt. 23.10.2015, Scrips under Chapter 3 will be valid for period of **24 Months from the date of issue.** The Scrip must be valid on the date of actual debit of duty is made. ***[HBP Para 3.13]***

29. Regarding procedure of Declaration of Intent on EDI and Non-EDI shipping bills for claiming reward under MEIS had gone changes at various time periods. It is now notified that:
a. EDI Shipping Bills: Marking/ ticking of "Y' (for Yes) in "Reward" column of shipping bills against each item, **which is mandatory**, would be sufficient to declare intent to claim rewards under the scheme. In case the exporter does not intend to claim the benefit of reward under Chapter 3 of FTP exporter shall tick "N' (for No). Such marking/ticking shall be required even for export shipments under any of the schemes of Chapter 4 (including drawback), Chapter 5 or Chapter 6 of FTP

b. Non-EDI Shipping Bills: In the case of non-EDI Shipping Bills, Export shipments would need the following declaration on the Shipping Bills in order to be eligible for claiming rewards under MEIS: "We intend to claim rewards under Merchandise Exports from India Scheme (MEIS)". Such declaration shall be required even for export shipments under any of the schemes of Chapter 4 (including drawback), Chapter 5 or Chapter 6 of FTP.
[FTP Para 3.14(a)]

30. SEIS was applicable for export of services made between 01.04.2015 to 31.03.201 7 only as per Note 1 of Appendix 3D. The said note is amended to read that rates as per Public notice will be applicable to exports

between 01.04.2017 to 31.03.2018.An increase in 2% across the board is also been made for the benefit under SEIS. ***[Public Notice 45/2015-20 Dated 05.12.2017]***

31. Transfer of Duty Credit Scrips under HSN 4907 attracts "NIL" GST Rate as notified under GST Rules. ***[IGST Notification No. 36/2017 – Integrated Tax(Rate) Dt. 13.10.2017]***

C. Chapter 4 – Advance Authorisation / DFIA

32. Two more categories have been added to Advance Authorisation is issued for inputs in relation to resultant product, they are:
    (iii) Applicant specific prior fixation of norm by the Norms Committee.
    (iv) On the basis of Self Ratification Scheme in terms of Para 4.07A of Foreign Trade Policy.

33. Scheme for Special Advance Authorisation for export of Articles of Apparel and Clothing Accessories has been notified in the policy. ***[FTP Para 4.04A]***

34. Advance Authorisation under Self Ratification Scheme currently only for Authorised Economic Operators (AEOs) has been notified. ***[FTP Para 4.07A]***

35. Imports under Advance Authorisation are exempted from payment of Basic Customs Duty, Additional Customs Duty, Education Cess, Anti-dumping Duty, Countervailing Duty, Safeguard Duty, Transition Product Specific Safeguard Duty, wherever applicable. However, imports under Advance Authorisation for **physical exports** are also exempt from whole of the integrated tax and Compensation Cess leviable under sub-section (7) and sub-section (9) respectively, of section 3 of the Customs Tariff Act, 1975 (51 of 1975), as may be provided in the notification issued by Department of Revenue, and **such imports shall be subject to pre-import condition.** Imports against Advance Authorizations for physical exports are exempted from Integrated Tax and Compensation Cess **upto 31.03.2018 only.** ***[FTP Para 4.14]***

36. Validity of Import Authorisation will be as per Handbook of Procedures. It continues to remain at 12 Months from the date of Issue of authorisation. RA may consider grant of One Revalidation for Six Months from expiry date. ***[FTP Para 4.17, HBP Para 4.41,]***

37. DFIA holder will not be eligible for Advance Release Order / Invalidation Facility. ***[FTP Para 4.20(vi)]***

38. Export Obligation under Advance Authorisation will be as Handbook of Procedures. Export Obligation Period as well remains same to 18 Months from date of issue of Authorisation. Export Obligation for items falling in categories of defense, military store, aerospace and nuclear energy shall be 24 Months. ***[FTP Para 4.22 & HBP Para 4.42]***

39. DFIA will not be available for Import of **Raw Sugar.** ***[FTP Para 4.25(c)]***

40. HRD Diamond Institute Pvt. Ltd, Maharashtra India and International Gemological Institute (India) Pvt. Ltd, BKC, Mumbai has been added along with existing 3 agencies as agencies permitted to import diamonds to their laboratories without any import duty, for the purpose of certification/grading reports with a condition that the same shall be re-exported with the certification/grading report as per the procedure laid down in Handbook of Procedures. ***[FTP Para 4.42]***

41. Subsequent to GST Regime, Jurisdictional Central Excise officer has been changed to Jurisdictional Customs Authority for intimation and endorsement of duty free inputs from one unit to another or to job worker. ***[HBP Para 4.10]***

42. The auto time limit of 4 months from the application date to Norms Committee for acceptance of the fixation of Adhoc Norms has been deleted. ***[HBP Para 4.16(i)]***

43. The Invalidation letter or ARO issued by DGFT will now have GSTIN details of the supplier along with address where input are required to be processed. ***[HBP Para 4.30(d) & 4.32(c)]***

44. Details and procedure for Regularization of Bona fide default in the cases where Authorisation was issued for import of drugs from unregistered sources with pre import condition is been added in the Handbook. ***[HBP Para 4.49(g)]***

D. Chapter -5 Export Promotions Capital Goods Scheme (EPCG)

45. Calculation of Annual Average Export Obligation under EPCG scheme has been notified in Appendix 5E. ***[Public Notice 47 Dt. 6th Dec 2017 – FTP Para 5.04 (b)]***

46. List of Capital Goods not Permitted or Permitted for Import with Specific Conditions under EPCG Scheme are been separated notified in Appendix 5F. ***[Public Notice 47 Dt. 6th Dec 2017 – FTP Para 5.01]***

47. Addition(s)/deletion(s) of import or export items under EPCG will be allowed subject to submission of fresh Nexus Certificate by an Independent Chartered Engineer and giving justification for seeking such amendments. ***[HBP Para 5.03(c) & (d)]***

48. Jurisdiction Custom Authority replaces Jurisdiction Excise Authority in view GST Regime. ***[HBP Para 5.04(a)]***

49. Provision for RA to condone 5% shortfall in specific export obligation has been deleted. ***[HBP Para 5.21]***

E. Chapter 6 – EOUs.

50. The procurement of goods covered under GST from DTA would be on payment of applicable GST and compensation cess. The refund of GST paid on such supply from DTA to EOU would be available to the supplier subject to such conditions and documentations as specified under GST rules and notifications issued there under. ***[FTP Para 6.01(d)(iii)]***

51. Applications for conversion into an EOU / EHTP / STP / BTP unit from existing DTA units, having an investment of Rs. 50 crores and above in plant and machinery or exporting Rs. 50 crores and above annually, shall be placed before BOA for a decision. ***[FTP Para 6.19(c)]***

F. Chapter 7 - Deemed Exports

52. **"Deemed Exports" for the purpose of this FTP** refer to those transactions in which goods supplied do not leave country, and payment for such supplies is received either in Indian rupees or in free foreign exchange. Supply of goods as specified in Paragraph 7.02 below shall be regarded as "Deemed Exports" provided goods are manufactured in India.

"Deemed Exports" for the purpose of GST would include only the supplies notified under Section 147 of the CGST/SGST Act, on the recommendations of the GST Council. The benefits of GST and conditions applicable for such benefits would be as specified by the GST Council and as per relevant rules and notification. ***[FTP Para 7.01 & Notification 48/2017 – Central Tax Dt. 18.10.2017]***

53. Benefits to Supplier / Recipient under FTP For Deemed Exports ***[FTP Para 7.04]***

Categories of supplies as per Para 7.02	Benefits on supplies, as given in Para 7.03 above, whichever is applicable.		
	Para 7.03 (a) Advance Authorisation	Para 7.03 (b) Duty Drawback	Para 7.03 (c) Terminal Excise Duty
(a)	Yes (for inter mediate supplies against an invalidation letter)	Yes (against ARO)	Yes

(b)	Yes	Yes	Yes
(c)	Yes	Yes	NA
(d)	deleted	deleted	deleted
(e)	Yes	Yes	NA
(f)	Yes	Yes	Yes, only for para 7.08(iii)(a)
(g)	Yes	Yes	NA
(h)	Yes	Yes	NA

54. Deemed exports benefits contained in FTP 2015-20 shall be available for supplies effected till 30.06.2017 in terms of FTP 2015-20 provisions as it stood till 30.06.2017. In respect of supply made after 30.6.2017, new provision shall apply. ***[FTP Para7.12]***

G. Chapter 9 – Definitions and Miscellaneous Provisions.

55. Following Definitions have been added to the FTP

a. **"e – commerce"** for the purpose of Merchandise Exports from India Scheme (MEIS) under Foreign Trade Policy (2015-20) (FTP) shall mean the export of goods hosted on a website accessible through the internet to a purchaser. While the dispatch of goods shall be made through courier or postal mode, as specified under the MEIS, the payment for goods purchased on ecommerce platform shall be done through international credit /debit cards and as per the Reserve Bank of India Circular (RBI/2015-16/185) [A.P.(DIR Series) Circular No. 16 dated September 24, 2015.] as amended from time to time. ***[FTP Para 9.17A]***

b. **"Project Exports"** refers to export of engineering goods on deferred payment terms and execution of turnkey projects and civil construction contracts abroad collectively.

Project Exports would encompass (i) Civil construction contracts; (ii) Turnkey Engineering contracts including supply of Capital Goods on deferred payment terms; (iii) Process and Engineering Consultancy Services; and (iv) Project Construction items (excluding Steel and Cement). ***[FTP Para 9.42A]***

56. ***Contact@DGFT*** service Complaint Resolution has been activated on DGFT website with an aim to provide single window contact for all the issues for exporters and importers with respect to foreign trade related issues.

Exporters can raise they query on the DGFT Website under this option and can tack the status of the query through the assigned reference number.

57. Three New Divisions Namely: Logistics Division, Service Division and State-of-Art Trade Analytics division are being set up.

The Logistics Division will aim to develop and co-ordinate implementation of action plan for integrated development of logistic sector.

The Service Division will examine EXIM policies and procedures from the point of view of "Services"

The Analytics Division will provide DGFT trade information from various national and international data bases to identify specific actions to address export interest in various markets and products.

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We are disappointed that in spite of the letters and reminders to the various departments, such as the Ministry of Chemicals & Fertilizers, a few industries are still manufacturing products like PCL5, PCL3; but there is no corrective action.

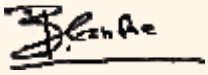
There is a likelihood that these chemicals can go into the hands of wrong people.

We are enclosing a copy of the letter written to Mr. P.S. Singh, which is self-explanatory.

We request you to take immediate action against such illegal manufacture; otherwise it will put the safety and the reputation of the people of India at risk.

Thanking you,

Yours sincerely,



P. S. Gandhe
Hon. Secretary,
ASMECHEM

1) Whodunnit?

A lab chemist was found murdered in his own lab. There was no evidence except for a piece of paper with the names of chemical substances on it, which he wrote right before he died.

The chemicals on the list were;
Oxygen, Carbon, Nickel, Lanthanum, Sulfur
On the day he was murdered, the chemist had only 3 visitors: His wife Mary, his nephew Nicolas, and his friend Johnathan.

The police arrested the murderer right away.

How did they know who it was and why?

2) The Poison Problem

Hydrochloric acid is a corrosive, fuming, poisonous, highly acidic solution of hydrogen chloride (HCl). Sodium hydroxide is a caustic, strongly alkaline compound (NaOH) used in drain cleaners. If ingested, hydrochloric acid corrodes the mucous membranes, esophagus, and stomach causing dysphagia, nausea, circulatory failure and death. Sodium hydroxide, if ingested, will cause vomiting, prostration, and collapse. Why is it that if you mix these two substances in the right proportions before ingesting them you will not have any poisoning symptoms?

3)

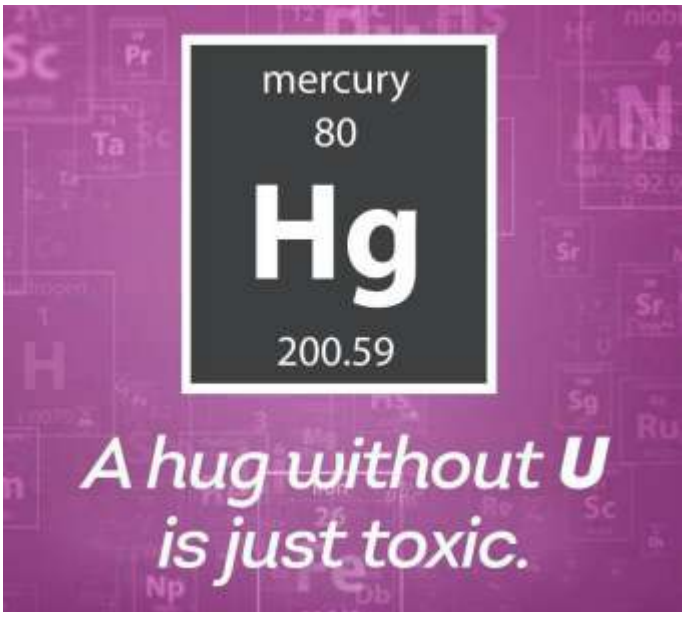
Mrs. Agarkar was going to bleach her sari because they had gotten muddy the day before.

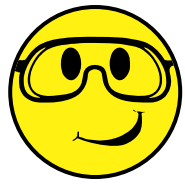
As she was pouring the bleach into the washing machine, she spilled some on the floor.

She got some cleaning fluid and mopped it up with a rag.

Minutes later Mrs. Agarkar was dead.

What killed Mrs. Agarkar?



Optimist	Pessimist	Chemist
		
The Glass is Half Full	The Glass is Half Empty	The Glass Contains 50% $H_2O(l)$ 39% $N_2(g)$ 10.5% $O_2(g)$ 0.44% Ar(g) 0.06% $CO_2(g)$

Answer the puzzle

1)

The chemicals in the list have the following chemical formula;

1. Oxygen : O
2. Carbon : C
3. Nickel : Ni
4. Lanthanum : La
5. Sulfur : S

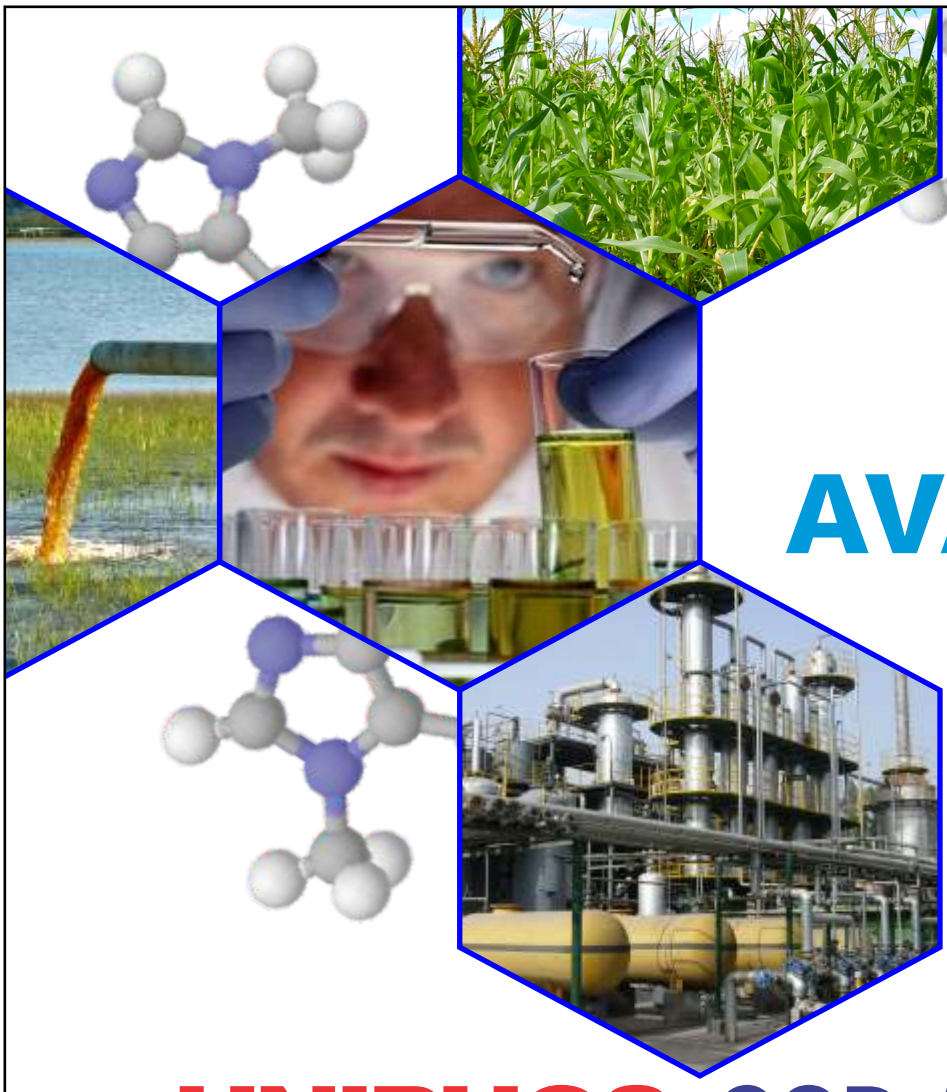
If you re-arrange this letters the name you get is Nicolas.

2)

Hydrogen chloride combines with sodium hydroxide to form common salt (sodium chloride) and water:
For example, $HCl+NaOH=NaCl+H_2O$

3)

When you mix bleach and ammonia (found in most cleaning products), it creates a deadly gas that can kill people.



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