APCOTEX Issue: 2nd / Year: 2nd CHRONICLE

April - June 2023





WE ENABLE PAPER PACKAGING

The presence of Apcotex products are everywhere. A number of everyday products, such as paper, plastic, building materials, food, pharmaceuticals, and personal care products, are manufactured worldwide using essential chemistry researched and developed by us.



Various print formats for print trials



Prufbau Verity Image Analyser

TO STAND UP TO WATER, SOLVENTS, OIL AND GREASE.



Talking about paper industry, our coating binder improves the appearance, printability, coating strength, gloss, surface gloss, and flexural properties of paper and paper board. It also has a strong resistance to water, oil, and abrasion.

Using a combination of chemical expertise, process technology, and application know-how, we solve a multitude of problems for paper manufacturers. Our coating portfolio improves paper packaging performance and functionality, protecting the product inside.

Partnering with some of the most innovative companies in the world for print trials and additional knowledge seminars is a top priority for us.

In our innovation lab, we simulate various paper products before their mass-production. We give inputs on the final product and add technical inputs to help our clients make a superior product forever.

Our USP lies in our consistent quality batch after batch, year after year. We have the experience, expertise, and products to help you get the job done efficiently, cost-effectively, and safely.

APCOTEX CHRONICLE

Quarterly in-house magazine of Apcotex Industries Limited on performance, achievements & aptitue in quality products and customer services.

Issue: 2nd, Year: 2nd April 2023 - June 2023

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Willingly, readers can send their reviews, veracious comments will be published in upcoming issues.

Editorial committee is not supposedly agree to the contents of the articles published herewith.

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From the desk of Chairman

The presence of Apcotex products is everywhere. This proficiency has been accomplished because of our Research & Development foundation which empowered our company to produce and export nitrile latex, positioned us as a strong and trustworthy quality supplier amongst the domestic and

global players. Our consistency in advancement and improvisation of the quality of our products made us to achieve the spearheading status quo in both the local and global market.

Now, to sustain our eminences as the market leaders and to serve our faithful customers in a more improved format, we have expanded our production capacity in multiples at our production locations at Taloja and Valia. I am sure that, this step as a 'Big leap'; will further position us as a mega exporter in latex products with a strong global presence spanning across all continents and several countries.

At Apcotex, we do believe that, such different actions and smart decisions with intelligence, will help us in the long run and this will prove ourselves as a 'Bond Beyond Chemistry'!

Atul Choksey
 Chairman, Apcotex Industries Limited

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EDITORIAL



Dr. S. V. Govindaraju

VP - R&D

and Technical Services

Dear Readers,

In a historical strategic move Apcotex Industries Limited just recently expanded the production capacities at both their locations, namely Taloja and Valia. Both these brown field projects, with all sophistication for safety and product quality, are intended to give a big leap for Apcotex in terms of volume and wealth creation for all stake holders.

Taloja expansion is for an enhanced production of XSBR latex, whereas Valia expansion is exclusively for an enhanced production of XNB latex for glove application. These new additional capacities keep Apcotex at global production levels for uninterrupted supplies of material to all our esteemed customers globally.

As reliability and quality of material are of paramount importance, we at Apcotex aimed at a larger capacity of production for all the segments that we cater to, thus resulting in this stupendous capacity enhancement.

We are extending invitations to all our customers, in a phase manner, to witness our new facilities in the next six months' time.

Let this big leap not only make Apcotex bigger and larger, but also closer to all customers with required quality and quantity of supplies. We look forward for your personal presence and best wishes for a big leap in our relationships.

We truly believe in "Bonds Beyond Chemistry".

Withbest regards,



My Dear friends,

Nowadays, Apcotex is registered in the mindset of our customers; for providing value-added services and utmost quality products to them through its robust and ultramodern R&D and technical platform. A number of everyday products, such as paper, plastic, construction chemicals, footwear, food, pharmaceuticals, and personal care products, are manufactured worldwide using essential chemistry researched and developed by us.

In preceding years, we have made significant strides in expanding our nitrile latex offerings. Our continual efforts in this area, firmly established us as a leading source of nitrile latex in the global market.

Recently we have extended our production capacity amounting to 75,000 MT at both our locations namely Taloja and Valia. This 'Big Leap' in production level; have constructed a calmness in our close customers for assured and uninterrupted source of quality products globally. This historical strategic move; not only have made Apcotex Industries Limited bigger and larger, but also more closer to its customers who were expecting the much needed quality and quantity in material supply along with prominence in services.

It turned out to be the most demanding and challenging phase but we accomplished it swiftly with all necessary technological transformation and permissible sophistications.

Personally I'm grateful for all our proficient technocrats as well all other skillful employees for everything they did towards the achievement of 'Big Leap'. It's rare to come across people who are so enthusiastic and responsive in achieving such missions. People who tread with reason, logic, and understanding to view the larger picture can only make such transforms!

Herewith as a trustworthy and reliable supplier, we at Apcotex are set to welcome all our customers to witness our new facilities. Meanwhile, with a vision of 'Bond Beyond Chemistry', we are ready to prepare ourselves for another 'Big Leap' in near future, till then bye-bye to all our close customers, stakeholders and well-wishers for an affluent and blissful journey towards their desired goals and good fortune!



Abhiraj Choksey

Managing Director

Apcotex Industries Limited

Apcotex Chronicle



Ravishankar Sharma Chief Operating Officer Apcotex Industries Limited

Dear Readers.

Since its inception, the quality products and state-ofthe-art technical services have made Apcotex a leading supplier of nitrile latex in domestic and global market. A number of products are manufactured worldwide using a specialized touch of essential chemistry researched and developed by us.

Recently we have taken a 'Big Leap' by extending our production capacity in Toto by 75,000 MT, keeping in mind; all aspects of safety, quality and environmental practices. It was a transforming period wherein we have worked on all possibilities of repurposing our products. This phase gave us new energy to revitalize and update our products and services by filtering them through current conditions and expertise.

Previously using a combination of chemical expertise, process technology, and application know-how, we have solved a multitude of problems of our customers and earned the trust of them. With this addition of extended manufacturing capacity; we have got another opportunity to prosper and sustain the faith of our customers globally!

Now we are ready to fulfill the export demands. The mission 'Big Leap' has been successfully accomplished only with the expertise and commitment of all our employees concerned.

With the support and positivity from all our patrons, well-wishers and skillful employees, we are prepared for another 'Big Leap' in near future!

VISIT TO SUPPLIERS A JOURNEY TOWARDS QUALITY EXCELLENCE....



During these visits, it's easy for us to observe our suppliers or our strategic partners, their products, infrastructure, manufacturing processes, quality standards and procedures followed etc. These visits also help them to get ideas to customize the required products they wish to supply. These visits are very crucial in decision-making in terms of consistent quality supply.

Sharing herewith a few moments of Apcotex Quality Team's visit to its suppliers.

The RM and PM suppliers are key members for our journey towards quality excellence. We have a strong supplier evaluation process. A supplier visit is on-site evaluation of a supplier's infrastructure, capacity, capability, methods, quality systems and work culture.

Such visits are undertaken as a compliance audit to validate that the policy and procedures agreed are being adhered to. These visits usually a combined technical assessment by subject matter experts. Sometimes commercial assessment can also be carried out. Visit to the suppliers place is an opportunity to assess the reality of supplier's ability to meet the requirements and to understand their manufacturing process & working model.







CSR INITIATIVE-

SKILL DEVELOPMENT WORKSHOP IN VILLAGE DUNDRE, PANVEL.



Conducted jointly with Deepak Foundation, Apcotex conducted a Skill Development Workshop for empowering women in facility management services. This was done in Dundre, Panvel on 24th April.

On completion of the workshop, certificates were distributed to the participants.

Historically, women in rural / semi-rural areas have faced numerous challenges due to limited access to education and opportunities.

It is our firm belief that by focusing on skills development, these women will gain valuable knowledge and abilities. This can transform their lives and enhance their communities.









Our CSR initiatives support economic empowerment, health enhancement, and quality education. It is our hope that we will be able to make a difference in lives and foster inclusive growth and sustainable development in rural areas near our plants.

SAFETY WEEK 2023

CELEBRATIONS AT VALIA PLANT



Safety Week 2023 Celebrations from 4th March to 11th March 2023, at Apcotex, Valia plant; has observed whole hearted response and participation from its employees and contract workers.

Initiatives such as distribution of Safety Badges and banners display on Safety Week Theme; 'Our Aim: Zero Harm' were originated. It created an energetic and enthusiastic ambience during the week.

To improve and to ensure the sustainability of safe work culture various competitions were held for plant employees & contract workers. For contract workers, special training sessions on Safety were scheduled and conducted by experts, which elevated their awareness on safety. An effective Safety Pledge Program was takenfor all.









SAFETY WEEK 2023

CELEBRATIONS AT TALOJA PLANT













As usual, during the period 4th to 11th March 2023, Apcotex has celebrated "Safety Week 2023" at Taloja plant with enthusiasm and dedication. Various programs and competitions for employees; in connection with safety awareness were held during this period. These competitions helped everyone to understand the awareness on Safety, Importance of safe work culture and sustainablity of it.

COO- Chief Operating Officer, and other dignitaries from top management were also present and given their valuable guidance on Safety.



PRESENTING HEREWITH A FEW GLIMPSES OF SAFETY INITIATIVES....

















Sustainable Outlook of NBR

S. Sardar, A. Pal, S. V. Aland, B. Panda, D. Chattopadyay, R. Santra & G. C. Basak

Our modern society is heavily dependent on the use of both natural and synthetic rubbers, which we use, feel and see in many forms and some of the rubbers are unknown to a user. Rubber is a fascinating material and has a wide range of applications from simple rubber band and eraser to special engineered spacecraft seals. However, it is quite obvious that unsustainable rubber production threatens the environment and human rights. Therefore, the explicit concept of "sustainability" has come into recent scenario so that the global temperature and heat island effect could reduce, improve local ecosystem and health, achieve carbon neutrality and increase resources to meet other requirements. In the present short note, a glimpse of the panoramic sketch of Nitrile Butadiene rubber (NBR) is portrayed to offer a direction toward plausible future developments in terms of sustainability.

Acrylonitrile Butadiene rubber (NBR) is generally termed as workhorse of the industrial and automotive rubber products businesses. It's a complex family of unsaturated copolymers of acrylonitrile and butadiene and by appropriately choosing the percentage of acrylonitrile content in the rubber, the application areas would be varied. However, owing to its superior

features and properties, this versatile rubber material is widely used in a different shot of applications including O-rings, gaskets, oil seals, V belts, printer's form rollers, cable jacketing, adhesive, pigment, automotive transmission belts, rice-husk and many more.

The demand is predicted from the various sectors namely automotive, oil and gas fields, mechanical industries in terms of hoses, cables, extruded goods etc. This has been further boosted up with the demand of growing unconventional oil & gas exploration activities across the globe.

Due to toxic nature of butadiene under the Canadian Environmental Protection Act, the environmental impact and consequently regulation part are coming into picture especially in Europe and North America.

There are three tactics available in the market in order to mitigate the issue related to environmental impact. The first would be essentially reduce the production of greenhouse gases during its manufacturing, second one would be introduction of renewable sources of feedstock in production and finally, find out the way to reduce the contribution of discarded rubber to be added in landfill build-up process.

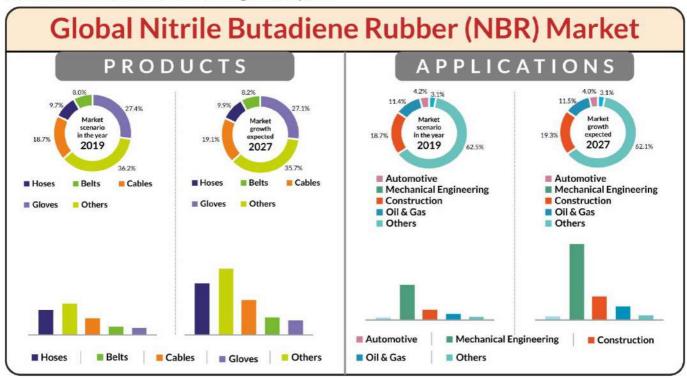


Fig. 1: Executive summary of global Nitrile Butadiene Rubber (NBR) Market in terms of USD million.

The Use of Renewable Energy in the Production of Nitrile Rubber

In order to reduce the environmental impact, many organizations are now being focused on how to properly utilize renewable energy specifically solar panels, wind powers or by using geothermal electricity plants during production of NBR and subsequently reduce the emissions of greenhouse gases.

Bio-Based Feedstock for Nitrile Butadiene Rubber

Due to non-availability of the petroleum raw materials and additionally high prices of the raw rubber, the rubber manufacturing segments in all over the world appetite for renewable, bio-based feedstock sources. Butadiene is primarily the key materials for NBR production which could be produced with the help of

renewable raw material sources such as non-food biomass, sugar, glycerine and other plant based raw materials. For an example, Michelin has associated with the technology firms to convert biomass to butadiene.

The Impact of Synthetic Rubbers on Landfill Build-up

Polymer, leather, and textiles constitute as much as 8 % of all landfill bulk and this 8 % represents a noteworthy burden on the environment. The waste generated from synthetic rubber e.g. latex industry generally augments from discarded used products or/and as a by-product of manufacturing of rubber goods. Therefore, being a technocrat/ industrialist/ researcher/scientist, it's our duty to significantly cut down or reduce landfill build-up and environmental pollution.

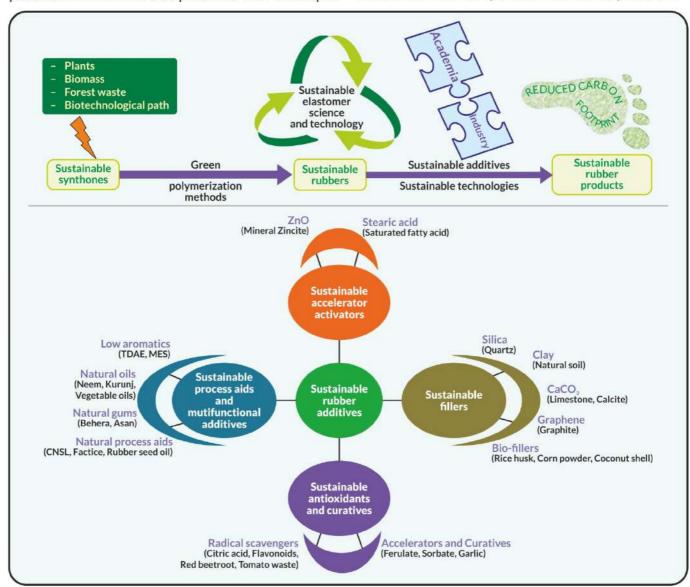


Fig. 2: Sustainable Rubber and Rubber Additives

Recycling, incineration and biodegradation are the three major routes by which rubber waste could be disposed.

Acrylonitrile (ACN) is one of the most extensively used monomers in chemical industry, which is produced almost 14 billion pounds in a year for the consumption of rubbers, plastics, resins and fiber namely acrylic fibers and polyacrylonitrile (PAN) based fibers. In today's industrial scenario, the industrial ACN production is carried out via the Sohio process in which polypropylene has been converted to ACN via ammoxidation over a bismuth molybdate-based catalyst.

The process achieves ACN molar yields exceeding 90% from ethyl 3-hydroxypropanoate (ethyl 3-HP) via dehydration and nitrilation with ammonia over an inexpensive titanium dioxide solid acid catalyst. For the production of ACN, nitrilation provides number of green chemistry over propylene ammoxidation:

 Near-quantitative yields of ACN can be obtained from this reaction, whereas state-ofthe-art ammoxidation catalysts achieve ~80 to 83% ACN yield,

- ii) In comparison to ammoxidation (exothermic reaction; required specified reactor in order to control runaway reactions) process, nitrilation process is endothermic nature and therefore doesn't require any O2, enabling facile process control,
- Additionally, nitrilation process doesn't produce any harmful materials as like hydrogen cyanide generated and therefor environmentally friendly in nature,
- The cost of the catalyst (TiO2) used for nitrilation process is 30% less as compared to ammoxidation catalysts,
- v) Because of volatility price range of PP, the production cost of ACN through Sohio process varies. Therefore, nitrilation process provides a cost effective, sustainable route having low greenhouse gas offsets from a renewable feedstock.

The scientific team from the University of Delaware, the University of Minnesota and the University of Massachusetts has invented a process by which butadiene can be produced from renewable sources

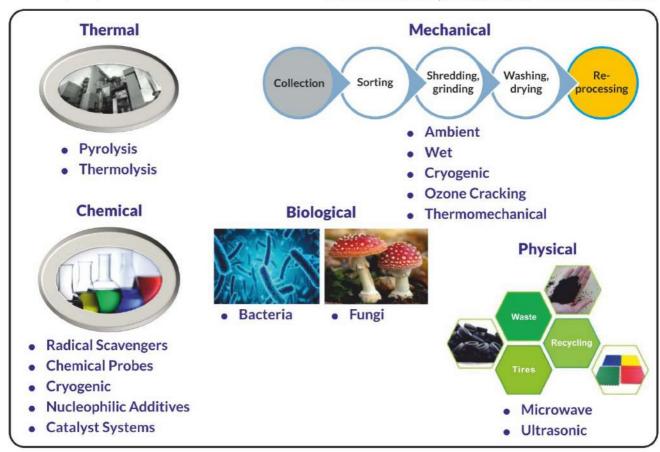


Fig. 3: Rubber Waste Management

like trees, grasses and corn. (Ref. cse.umn.edu). In the novel process which included there-step process starting from biomass-derived sugars. First, sugars were converted to a ring compound called furfural. In the second step, furfural was further converted to tetrahydrofuran (THF). In the last stage, using an ingenious catalyst called "phosphorous all-silica zeolite" the THF was transformed to butadiene having greater than 95% yield. The process comprises three stages:

- decarbonylation of furfural to furan and carbon monoxide, along with the associated separations and recycle,
- 2) furan hydrogenation to THF, and
- dehydra-decyclization of THF to butadiene followed by butadiene purification. The team named this selective reaction as "dehydradecyclization".

In the last few years, few research groups have reported different interesting mechanistic studies related to the development of self-healable NBR composites. Nellesen has studied the self-healing capabilities after macroscopic damage in XNBR. It was observed that 50 % restoration of tensile strength was obtained for non-vulcanized samples, whereas 15 % observed for cured materials. Schüessele et al has also developed NBR compounds containing low-viscosity hyper branched polyethylenimines (PEIs) as blend components and migrating additives, which formed microphases that promoted healing up to 40 % efficiency in terms of tensile strength. Similarly, a supramolecular network has been formed by using PEIcellulose nanocrystals and the carboxylic group of XNBR latex and the resultant blend shows a healing efficiency of ~83% in tensile strength and ~80% in elongation at break. A photo-reversible cycloaddition reaction of anthracene groups to impart self-healing properties to hydrogenated carboxylated nitrile rubber (HXNBR) has been studied by Manhart et al. Ground tire rubber selectively modified by grafting of poly (acrylic acid) (gGTR), was added to XNBR-ZnO compounds with the aim of improving the healing properties of the rubber matrix. Santana et al. has also evaluated the incorporation of acid groups which contributed to the formation of additional ionic clusters during the crosslinking process, resulting in a notorious increase in healing efficiency from 15% for the XNBR-ZnO to 70% for the XNBR-ZnO-gGTR compound. In another study, the research work has been focused on the effect of chitosan powders on the mechanical, morphological and thermal behaviour of nitrile rubber (NBR). Though in this above stated methodology, the optimization of self-healing capabilities of elastomers have been focused, however, their accumulation as a waste material in the landfills due to practical impossibility of their reprocessing has been not taken care of till date. A few studies have also been focused on accelerated free and bio-sourced plasticizers in rubber industry to ensure the environmental sustainability of the entire production cycle was described.

Conclusions

In order to reduce the carbon footprint, sustainable elastomers have gained considerable interest in the current scenario. Apart from various recently adopted manufacturing technology having environmental as well as living entity benefits, various crucial factors such as judicious compounding and finishing of particular products, cost-effective recycling methodologies, advanced degradation process and various waste management options have been adopted. The primary focus of this part is well taken by various healthy Government policies, stringent rule and regulations by appropriate authorities.

It is obvious that the new technologies will allow us to manufacture Nitrile rubber from a safer and sustainable source. Moreover, the recycling and refurbishing of rubber products would definitely mitigate the amount of waste rubber deposited in the landfills. So, considering a balance in between sustainable growth along with new development would make a planet a better and safer place for our next generation.

For further details please feel free to contact the journal writer Dr Ganesh Chandra Basak

Dr. Ganesh Chandra Basak, Manager R&D has experience of more than 11 years in this field. Before joining Apcotex Industries Limited, Valia plant, he has worked

with Reliance Industries Limited, Raychem RPG Private Limited, and Havells India Limited.

He has done his B.Sc. in Chemistry (H), B. Tech and M. Tech in Polymer Science. and Tech. from University of Kolkata and completed Ph. D. from IIT Kharagpur.





WOMEN'S DAY 2023 TO ALL THE WOMEN: YOU ARE STRONG; YOU ARE CAPABLE & YOU ARE VALUED.

At Apcotex, we are committed to gender equality. We believe that women deserve to be celebrated, respected, valued, and empowered. Together, let's strive towards a more inclusive and equitable world, because progress can only happen when we create positive change for everyone.









ADVENTURE ACTIVITIES

A SPECIALIZED WAY TO FOSTER CAMARADERIE AND WOMANHOOD.





Women's Day celebrated at Apcotex; as an occasion to honor the achievements, strength, and resilience of women of Apcotex. While last year it was typically associated with celebrations, gifts, and empowering events, this year it was celebrated with an adrenaline rush.

This special day adventure activities provided, a unique and thrilling way to commemorate along with empowering women to embrace their inner daredevil. It has not only provided a thrilling experience but also allowed them to conquer their inner fears; challenged their limits and pushed themselves beyond the boundaries. It showcased their strength and resilience that they possess.

For our women employee, participating in an adventure activity on Women's Day was an unforgettable experience. Engaging in adventure activities in the great outdoors not only rejuvenates their mind and body but also offered a sense of liberation and empowerment. It proved as an excellent opportunity to break free from the confines of everyday life and immerse in the wonders of nature.

Della Resort, Lonavala is famous for the adventure activities like hiking, rock climbing or zip-lining. Conquering treacherous terrains, navigating through roaring rapids, or braving the heights of a bungee jump, each activity exists over there is an opportunity to prove mettle and remind the participants of their limitless capabilities. So the venue was confirmed to celebrate Year 2023's Women's Day in a unique and adventurous way.

Engaging in adventure activities on Women's Day fostered a strong sense of camaraderie and sister-



hood bondings among women employees of Apcotex. Sharing the thrill of conquering challenges together created lasting memories and strengthened 'Bond Beyond Chemistry' among themselves.

Celebrating the Women's Day 2023 with exploratory activities helped our women employees to dare to step out of their comfort zone and celebrate the spirit of womanhood with an adventurous twist.

As a woman, they possess immense strength and resilience, and after participating in adventure activities on Women's Day; was a powerful reminder to our women employees of their boundless potential.

This Women's Day has instilled a blissful sense of empowerment, boosting self-confidence and inspiring a can-do attitude amongst our women wing.

— Ashwini Pawar,QA, Taloja□□□

A BIG LEAP

A PROGRESSION TOWARDS DEVELOPING PRODUCTS WITH A CORE PURPOSE!



2019

Apcotex entered into Nitrile Latex business for Gloves application. 2021

Taloja Latex plant capacity increased to 65,000 MT and Valia plant NBR capacity to 21,000 MT. 2023

New Nitrile Latex capacity of 50,000 MT at Valia will further be expanded to 80,000 MT in the next phase. Taloja Latex plant swing capacity increased to 100,000 MT.

OUR TECH SAVVY QC

INSTALLATIONS OF NEW HIGH ACCURACY TESTING FACILITIES AT VALIA PLANT.





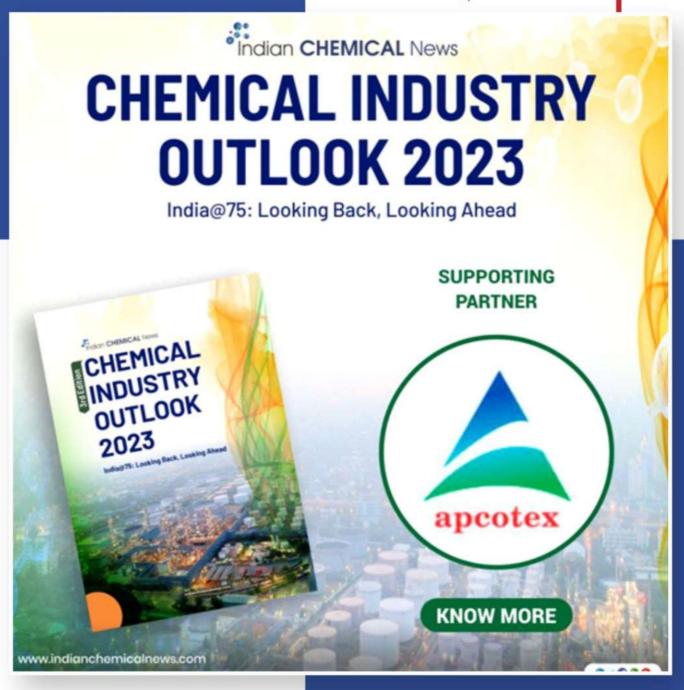






ANOTHER FEATHER IN OUR HAT!

It's a pleasure to inform that,
'Apcotex Industries Limited' is a Supporting Partner for ICN Chemical Industry
Outlook 2023 Compendium.



GREENCO CERTIFICATION -

Apcotex Industries Limited, Taloja plant has successfully achieved the "GREENCO

BRONZE" certification under the GreenCO - Green Company Rating System which is valid for the period of 3 years.

Green Company Rating

system (GreenCO Rating) for companies
is a major initiative taken by CII for promoting green practices in the industries.



SUCCESS STORY to share with!

On Friday, 24th February 2023 at 2nd Annual Supply Chain & Logistics World Summit & Awards 2023 held at Radisson, Andheri MIDC, Mumbai. *Mr. Ravindra Gadre, Chief Procurement Officer & SCM from Apcotex Industries Limited*, shared his wisdom and knowledge on "Creating an Agile Supply Chain through Vision, Leadership, and Innovation: Insights from SCM and Logistics Experts".



The Moderator, Shri. Ajay Singh, VP-Supply Chain Management from Hindustan Platinum and other co-member of Panel Shri. Anish Popli, CEO & Founder from ProcMart were also exchanged their enlightenments on above said subject.



