ILTA
Since 1950

JILTA

Journal of Indian Leather Technologists' Association

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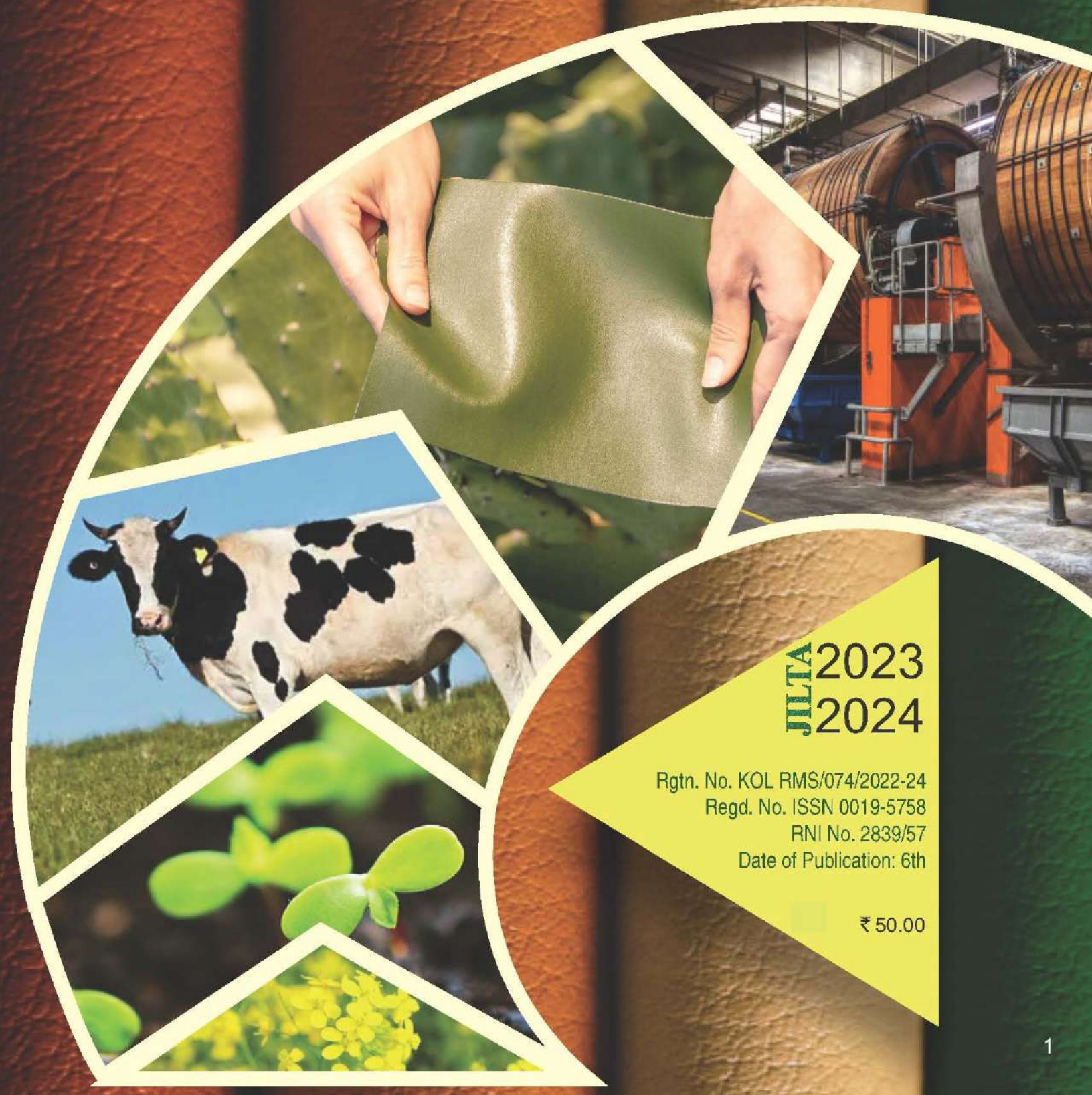

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Synopsis of Objectives

- An Association with over 550 members from India and abroad working since last 72 years for the growth and development of Leather and its allied industries.
- Organize seminars, symposiums, workshops in order to share information, knowledge & latest development and interactions for the benefit of all concerned.
- Organize Human Resource Development programmes on regular basis.
- Publish for over 72 years, a technical monthly journal namely "Journal of Indian Leather Technologists' Association" (JILTA), widely circulated through out the World.
- Publish books for the benefit of the students at various levels of study, for the Research Scholar and the Industry.
- Work as interface between Industry and the Government.
- Assist Planning Commission, various Government Institutions, Ministry and autonomous bodies to formulate appropriate policies for the growth of the Industry.
- Assist small and tiny leather goods manufacturers in marketing their products by organizing LEXPOs in Kolkata and different parts of India.

ILTA
Since 1950

Indian Leather Technologists' Association
[A Member Society of International Union of Leather Technologists' and Chemists Societies]

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(JILTA)

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JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

Indian Leather Technologists' Association is a premier organisation of its kind in India was established in 1950 by Late Prof. B.M.Das. It is a Member Society of International Union of Leather Technologists & Chemists Societies (IULTCS).

The Journal of Indian Leather Technologists' Association (JILTA) is a monthly publication which encapsulates latest state of the art in processing technology of leather and its products, commerce and economics, research & development, news & views of the industry etc. It reaches to the Leather / Footwear Technologists and the decision makers all over the country and overseas.

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(Member Society of International Union of Leather Technologists and Chemists Societies)

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JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

As an active proponent of responsible chemistry, Stahl has established the Stahl Campus® training institute in its Center of Excellence for sustainable leather technologies in Kanpur. With our Stahl Campus® Leather Modules, we can offer training and information, such as responsible chemistry and sustainability in leather production. We believe that in this way, we facilitate transparency that inevitably will lead to a better supply chain with responsible chemistry.

Our approach is modular, making it easy to tailor learning programs to specific needs. Stahl Campus® has at its core the drive to unlock human potential and make that new competitive advantage. By providing the possibility of sharing knowledge, we embrace our role in the dynamic leather and chemical industry. Stahl Campus® is a great opportunity to strengthen skills and capabilities in order to make working methods more efficient by sharing experiences and studying products and procedures.

If you're interested to receive more information on Stahl Campus®, please contact Prasanna Maduri (**Prasanna.maduri@stahl.com**).

If it can be imagined, it can be created.

stahl
We imagine sustainable pickle-free leather tanning
If it can be imagined, it can be created.
Tanners benefit from higher process efficiency, reduced water, chemical and salt consumption and a reduced environmental impact. This makes it possible for tanners to have an efficient process that is also sustainable and yields ecofriendly premium leathers.
High-quality leather no longer forces a choice between responsible processes and efficiency. The main benefits of a pickle-free system that avoids salt addition during pickling are:
▪ Reduction of water consumption by up to 40%
▪ Shorter process time on cow, sheep and goat
▪ Cleaner effluent, TDS reduction by up to 40%

STAHL EXPANDS ZDHC LEVEL 3-CERTIFIED PORTFOLIO

Stahl, the world leader in speciality coatings and treatments for flexible substrates, has achieved Zero Discharge of Hazardous Chemicals (ZDHC) MRSL 3.1 Gateway certification for 2,151 products in its portfolio. This achievement underlines Stahl's ongoing commitment to the ZDHC mission of achieving the highest standards for sustainable chemical management.

ZDHC certification enables companies working in the footwear, apparel and accessories value chains to demonstrate their commitment to responsible chemical management, with the ultimate goal being zero discharge of hazardous chemicals. Level 3 certification represents the highest level of conformity with the ZDHC certification programme. To achieve this, Stahl's formulated chemical products and raw materials were verified and tested against ZDHC's latest Manufacturing Restricted Substances List (MRSL 3.1) by Eurofins | Chem-MAP®. The Chem-MAP® programme was also used to audit the chemical management and stewardship processes at three of Stahl's manufacturing sites.

Michael Costello, Group Director Environmental, Social & Governance at Stahl: *"This latest expansion of our ZDHC-compliant portfolio is another key milestone in our journey towards sustainable chemical management. We will continue to work tirelessly with our value chain partners to achieve the ZDHC vision: A world in which better chemistry leads to the protection of life, land and water."*

(Stahl News – 25/01/2024)

STAHL OPENS NEW CHINA TECHNICAL CENTRE WITH GRAND CELEBRATION

Stahl celebrated a major milestone with the official opening of its new China Technical Centre, located in Foshan City, Guangdong Province. The Stahl China Technical Centre is one of Stahl's most advanced technological centres, boasting world-class machinery, extensive industry experience and comprehensive technical support for Chinese customers.

Maarten Heijbroek, CEO of Stahl, was present to inaugurate the new centre. The official opening also coincided with the Stahl China annual meeting, which was marked with festivities in Suzhou.

MARKING THE YEAR JUST ENDED, AND THE YEAR TO COME

The opening day began with the Stahl China annual meeting – an opportunity for Stahl's leadership team, customers, business partners and colleagues to celebrate Stahl's achievements. In a first for the division, Maarten Heijbroek was welcomed to the meeting for the first time since becoming CEO of Stahl Group.

Hagen Chen, Managing Director of Stahl Greater China & East Asia, thanked all colleagues and partners for their excellent contribution during the challenging market environment in 2023. Chen was optimistic that Stahl China will accelerate its growth as it pursues new business opportunities in packaging coatings and industrial coatings.

The meeting culminated in the presentation of the Long Service Award, expressing the company's gratitude towards its dedicated employees.

A CELEBRATORY MOOD FOR THE NEW CENTRE

The focus then turned to the grand opening of the new China Technical Centre. Multi-talented Stahl colleagues opened the festivities with traditional lion and dragon dances, winning thunderous applause from the audience.

Speeches followed from Stahl's leadership. Xavier Rafols, Group Director Leather, explained how the new China Technical Centre will enable Stahl to offer more technical services to the market. He reaffirmed the company's commitment to the Chinese leather industry and to providing excellent service to its customers.

PICTURING PROGRESS IN THE YEAR OF THE DRAGON

Maarten Heijbroek added in closing that China is an essential focus with Stahl's growth strategy. Expressing his confidence in the market, he pledged to continue to invest in China. He thanked the Chinese team for their outstanding performance during a period of intense transformation and diversification at Stahl.

He concluded by wishing all Stahl colleagues, customers, business partners and their families a Happy Chinese New Year. And with China's auspicious Year of the Dragon just around the corner, it promises to be a year of good fortune and good health for all!

(Stahl News – 29/01/2024)

CELEBRATING OUR WOMEN IN SCIENCE: BEATRICE CHEN

At Stahl, our purpose is to touch lives for a better world – and in order to do that, we need to harness all possible talent. Sunday 11 February marks thefIInternational Day of Women and Girls in Science, which promotes women's access to, and participation in, the fields of science, technology, engineering and mathematics (STEM). To mark the occasion, we talked to Stahl colleague Beatrice Chen, who works at our technical centre in China, about what (and who) inspires and drives her.

CAN YOU TELL US A BIT ABOUT WHO YOU ARE AND WHAT YOU DO AT STAHL?

I'm Beatrice Chen, and I work as in technical sales at our Leather Finishing lab in China's Technical Centre. My main responsibilities are application testing, collection article development and providing technical services to customers. Most leather finishing technicians are male; I'm one of the few women on the team.

IF YOU HAD TO PICK A HISTORIC, INSPIRING WOMAN IN SCIENCE, WHO WOULD THAT BE?

In my opinion, a person's professionalism is independent of their gender or profession. We can acknowledge that men have achieved more in certain fields, such as physics, mathematics, computer science, etc. But this does not mean that women do not have the capabilities to become outstanding in these areas: it mostly depends on their level of inclusion. I pay close attention to the Nobel Prize ceremony every year, and there are many outstanding female scientists who have won the Nobel Prize, like Katalin Karikó, who won the Nobel Prize in Physics last year, and of course, Madame Curie, who has influenced women like me since childhood.

IN WHAT WAY DID THESE WOMEN HELP YOU WITH YOUR RESEARCH?

All these women who have achieved remarkable success in the field of science share a common trait, which is focus, passion, persistence, and curiosity about the world. I think it's important to continuously improve one's knowledge in the professional field, persist in research and development in this field, and at the same time, commit to exploring unknown fields. Looking specifically at the role of a leather finishing technician, the above also applies. One must continuously improve product awareness and finishing skills, maintain enthusiasm for work, and strive to develop new articles, new finishing processes, or new application ways for products. I also believe it's necessary to maintain effective communication with others, obtain the latest information and learn your customers' true needs.

HOW DO YOU HOPE TO INSPIRE OTHERS?

Finishing is not a routine and tedious job, but rather an artistic creation, like ballet dancing with leather. So, I would like to say that if you truly immerse yourself, you will enjoy the pleasure of creation. And of course, don't forget to enjoy life!

We were certainly inspired by Beatrice's vision and dedication. Diversity is critical to our success as a company.flRead moreflabout our vision of diversity for creativity and innovation.

(Stahl News – 05/02/2024)

STAHL MOURNS THE LOSS OF FORMER CEO FRANK POLICKY

We are sad to announce the passing of former Stahl CEO, Frank Policky on Wednesday 31 January 2024, at the age of 80.

Frank was appointed President and CEO of Stahl in 2004, having joined the company in 1984 as an Applications Manager in Leather Finishes. A dedicated leather expert, Frank studied Leather Technology at the University of Leeds, UK and spent 15 years in the tanning industry before joining Stahl.

Together, we remember Frank and send our best wishes to his loved ones at this difficult time.

Maarten Heijbroek, CEO

(Stahl News – 06/02/2024)

CELEBRATING OUR WOMEN IN SCIENCE: FERNANDA DE ALBA

At Stahl, our purpose is to touch lives for a better world – and in order to do that, we need to harness all possible talent. Sunday 11 February marks the International Day of Women and Girls in Science, which promotes women's access to, and participation in, the fields of science, technology, engineering and mathematics (STEM). In this blog, we talk to Stahl engineer Fernanda de Alba about what (and who) inspires and drives her.

CAN YOU TELL US A BIT ABOUT WHO YOU ARE AND WHAT YOU DO AT STAHL?

I'd love to! My name is Fernanda de Alba, and I was born and raised in México. I am 28 years old and working as a Chemical Engineer at Stahl.

I like to describe my role as doing whatever is required to make a sale happen. This involves having the complete picture of the product cycle all the way up to the perspective of the market and customers, with the clear objective to bring them together.

IF YOU HAD TO PICK A HISTORIC, INSPIRING WOMAN IN SCIENCE, WHO WOULD THAT BE?

I absolutely believe that there was a 'before' and 'after' period connected to Marie Curie's contribution to the history of science. Her life story is a clear example of how pioneers in the early 1900s actively demanded and forged a place for women in science.

IN WHAT WAY DID THESE WOMEN HELP YOU WITH YOUR RESEARCH?

First of all, simply learning about the stories behind these women's achievements is really motivational. The example they set is one of our most powerful assets.

If we put the years in which Marie Curie, Dorothy Crowfoot or Rosalind Franklin lived into context, just by simply embarking on their careers they faced a very complex adversity that fortunately today's generation would find it difficult to understand. Not only was their ability questioned by the scientific community, but on numerous occasions they would be questioned and judged on the basis of their personal lives.

So, to sum it up, I admire their tenacity: for deciding to be what they were told they couldn't be. I would love for those pioneering women scientists to know how much their careers, and the decisions they made, meant to what we have today.

They are the role models that inspired the following generations, and we must keep doing so in order to see more women within STEM fields: we still have a way to go!

HOW DO YOU HOPE TO INSPIRE OTHERS?

I believe that we have a responsibility to continue forging a path for new generations. We owe it to the women yet to come and the women that came before us.

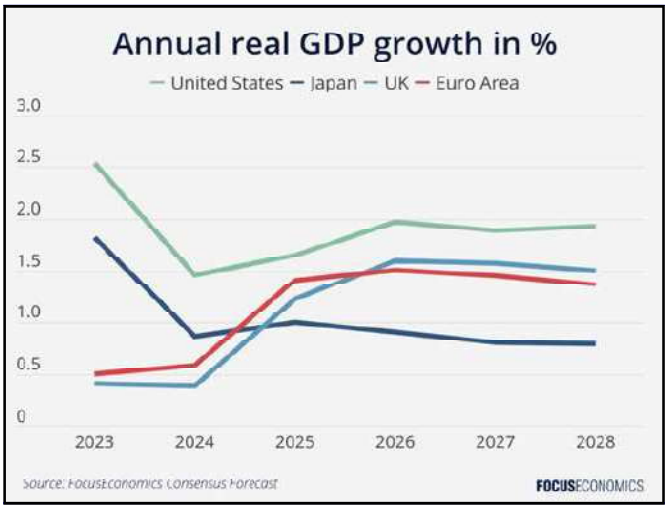
I think that if you promote the roles that women play in STEM areas and make them visible, it is already enough. You will undoubtedly – and inevitably – be a source of inspiration for the people around you.

Fernanda, thank you for helping pave the way for future female engineers! Diversity is critical to our success as a company. Read more about our vision of diversity for creativity and innovation.

(Stahl News - 10/02/2024)

The U.S. Economic Look

The U.S. economy saw stellar economic growth in 2023, leaving other developed economies in its wake. Declining inflation, rapid employment growth and the boost to business investment from the government's Inflation Reduction Act and CHIPS Act all supported the economy. U.S. GDP growth clocked 3.3% in seasonally adjusted annualized rate terms in Q4, well above market expectations. The Q4 reading was likely by far the strongest in the G7 and meant that the economy expanded 2.5% in annual terms over 2023 as a whole, above the prior decade's average of 2.3%. Back at the start of 2023, our Consensus had been for just 0.5% growth, with panellists' forecasts being persistently upgraded throughout the year.



On their forecasts, Goldman Sachs analysts said :

"We are above consensus on most components of GDP, especially consumer spending, capex and housing. Our 2.4% forecast for 2024 Q4/Q4 growth (or 2.9% on a full-year basis) reflects a stronger 2.6% pace in 2024H1 driven by consumer spending momentum, the near-term boost to housing from the recent decline in mortgage rates and higher state and local government spending, and then a somewhat softer 2.2% pace in 2024H2 as capex growth related to the IRA and CHIPS Act moderates."

In contrast, EIU analysts are somewhat more downbeat :

"We will revise up our real GDP growth forecast for 2024 to 1.8%, assuming that real private consumption growth slows, but remains positive. However, if the disinflation trend is interrupted, this would prompt the Fed to maintain its tight stance for longer, weighing on growth."

The United States has a diverse, highly developed and private-sector-led economy, which is the largest in the world in nominal GDP terms and is characterized by high levels of productivity, technological innovation, and competitiveness. Other key economic strengths include a flexible labour market, relatively solid demographics compared to other rich nations, and the use of the dollar—the world's reserve currency. U.S. economic data is strong: In the decade to 2022, the United States boasted real GDP growth of 2.1%, well above the G7 average of 1.7%. However, the U.S. also has its weaknesses. Income inequality is the highest among its peers, politics and society at large are bitterly polarized, and the fiscal position is weak. The country boasts many of the world's largest and most successful corporations. The technology sector, centered in places like Silicon Valley, has played a pivotal role in driving innovation and global competitiveness. In recent decades, the United States has seen a shift towards a service-based economy, benefitting from a vast domestic consumer base. Services, such as finance, healthcare, education, and entertainment, now account for a substantial portion of GDP and employment.

International trade is a cornerstone of the U.S. economy, with the nation being both a major importer and exporter of goods and services. That said, trade policy has turned more protectionist in recent years, with the country pulling out of talks to join the CPTPP trade agreement and locked in a trade and technology war with China. Under President Biden, the country has implemented a more state-led approach to economic management that focuses on boosting domestic manufacturing and ensuring the security of supply chains. Initiatives have included green-energy subsidies and tax breaks,

fiscal incentives for semiconductor production, and domestic content requirements for government procurement. Income inequality, volatile politics and a mounting fiscal burden remain economic drags. Additionally, despite its active role in trade, the U.S. has maintained a trade deficit for several decades. Moreover, climate change, healthcare costs, and the aging population pose long-term economic concerns.

When looking at the United States' economic forecasts, our analysts expect the nation's outperformance relative to other major economies to continue over our forecast horizon. Economic diversification provides stability and resilience, helping the economy weather challenges such as economic downturns and global crises.

The United States' economy in numbers :

- Nominal GDP of USD 25,744 billion in 2022.
- GDP per capita of USD 77,187 compared to the global average of USD 10,589.
- Average real GDP growth of 2.3% over the last decade.

In 2020, services accounted for 81% of overall GDP, manufacturing 11%, other industrial activity 7%, and agriculture 1%. Looking at GDP by expenditure, private consumption accounted for 67% of GDP in 2020, government consumption 15%, fixed investment 21%, and net exports -3%.

In 2021, manufactured products made up 58% of total merchandise exports, mineral fuels 16%, food 11%, ores and metals 4% and agricultural raw materials 2%, with other categories accounting for 9% of the total. In the same period, manufactured products made up 77% of total merchandise imports, mineral fuels 8%, food 7%, ores and metals 3% and agricultural raw materials 1%, with other goods accounting for 4% of the total. Total exports were worth USD 2,090 billion in 2022, while total imports were USD 3,273 billion.

Economic Consensus is for economic growth to ebb this year, but the economy now seems very unlikely to contract, given sustained disinflation in recent months and still-robust economic activity.

On current economic conditions, TD Economics' Thomas Feltmate said: "Economic growth ends 2023 with a bang, smashing expectations and stringing together two of the strongest back-to-back quarters in two-years. The details of the report were very supportive of the ongoing resilience, with domestic demand accounting for most of last quarter's gain. With the economy holding up remarkably well and the labor market still tight by historical standards, policymakers can afford to proceed carefully over the coming months. Economic growth is still running well above its long-run potential."

On the outlook, Nomura analysts said: "Faster disinflation and the Fed's dovish pivot have led to easing financial conditions and robust risk sentiment. This reduces the risk of a sharp credit contraction in the business sector and may unleash pent-up demand in housing and consumer spending when the Fed delivers its widely expected rate cuts. Although recession risks will linger […] a contraction is no longer our base case."

At the meeting ending on 31 January, the Federal Open Market Committee (FOMC) left the target range for the federal funds rate at 5.25%–5.50% for the fourth straight meeting, as expected by markets. The decision was likely driven by the Fed's desire to assess the impact of past rate hikes, which total 525 basis points since early 2022. Price pressures have come down sharply so far this year, meaning there was no need to continue hiking. On the flipside, it was premature to begin monetary easing given that both headline and core inflation are still both above the Fed's 2.0% target range and that headline inflation overshot market expectations in December. Looking ahead, the Fed's December projections were for the midpoint of its federal funds rate range to end 2024 at 4.6%. This is slightly above the forecasts of our panellists, which are for the upper bound of the federal funds rate range to be around 4.4% by end-2024. That said, the discrepancy among panellists is wide: the spread between the minimum and maximum policy rate forecasts for end-2024 is 275 basis points, reflecting still-notable uncertainty over the paths for inflation and economic growth.

On the latest meeting, DBS analysts said: "The [Fed] was not ready to declare victory and set the ground for immediate rate cuts. The statement's tone was less dovish than what the market

would have liked, especially the assertion that more supporting data pointing to sustainably 2% inflation is needed before cuts materialise. Strikingly, Chair Powell pushed back explicitly against a March cut during the press conference."

On the outlook, United Overseas Bank's Alvin Liew said: "We keep our more conservative projection for the Fed to maintain its current FFTR at 5.25-5.50% through mid-2024 where we price in 75bps of rate cuts for 2024 (i.e., three 25-bps cuts, one each in Jun 2024, 3Q24 and 4Q24 respectively)."

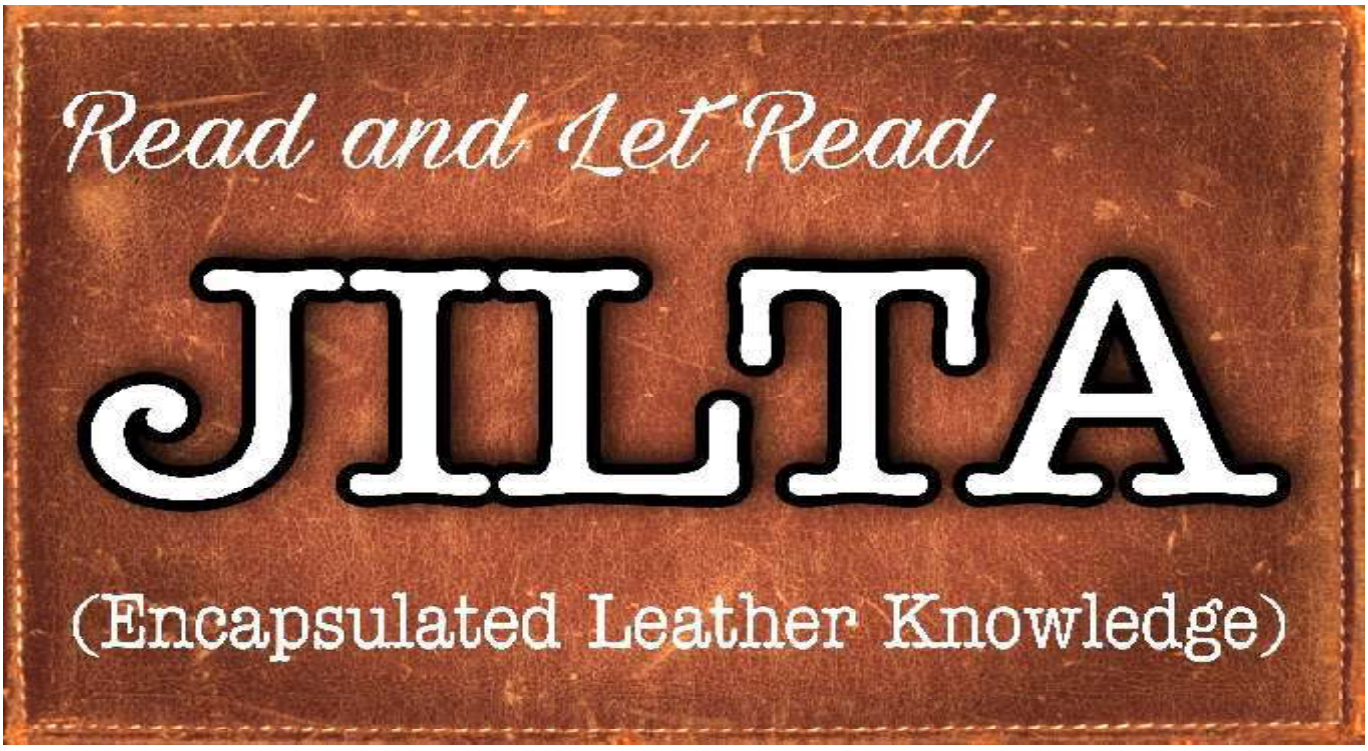
ING's James Knightley is more dovish: "We remain happy with our call that the Fed will wait until May before cutting interest rates. By May we think ongoing subdued core inflation measures will give the Fed the confidence to cut with the policy rate getting down to 4% by the end of this year and 3% by mid-2025. This will merely get us close to neutral territory – the Fed's view is that 2.5% is likely the long-term average."

Economic Consensus for 2024 GDP growth is currently 1.5%, though this figure will be revised higher in the coming weeks in light of the recent large upward surprise to Q4 2023 data. However, the spread between our panellists' forecasts is large: Our most pessimistic panellist sees just a 0.8% expansion, while our most optimistic—Goldman Sachs—forecasts 2.9% growth, which would be almost triple the G7 average. This discrepancy likely arises as a result of uncertainty over the persistence of inflation and the timing and scale of the Federal Reserve's interest rate cuts; there remains some doubt about how the U.S. economy is today.

Beyond 2024, U.S. GDP growth is projected to track close to 2.0% out to 2028, the end of the forecast horizon in our PDF reports (forecasts out to 2033 are available via our online FocusAnalytics platform). As a result, the U.S.' economic clout relative to other major advanced economies will continue to increase. Despite volatile politics and entrenched social division, the U.S. economy will continue to be boosted by key structural advantages—the use of the world's reserve currency, deep capital markets, a flexible labour market, still-healthy demographics, and the planet's most dynamic private companies and research institutes.

Goutam Mukherjee

Dr. Goutam Mukherjee
Hony. Editor, JILTA




Leather Fraternity 73 years of service to the International

From the desk of General Secretary

5TH PROF. S. S. DUTTA MEMORIAL LECTURE

The 5th Prof. S. S. Dutta Memorial Lecture (the 10th Seminar since 2014 on the occasion of IILF at Chennai) was organized by the Southern Regional committee of Indian Leather Technologists Association (ILTA) in association with CSIR-CLRI, GCELT, ILPA and Indian Leather magazine as media partners at the Hall-A of Convention Center in the Chennai Trade Center campus on Friday the 2nd February' 2024 during 37th India International Leather Fair (IILF – 2024).

Program commenced with invitation to the following dignitaries on the dais for their respective seats.

1. Mr. M. Abdul Wahab, Managing Director, K. H. Exports India Private Limited, Chennai.
2. Dr. B. Chandrasekaran, former Director, CSIR – CLRI.
3. Dr. J. Raghava Rao, former Principal Scientist, CSIR – CLRI.
4. Dr. R. Mohan, Secretary, Southern Region (ILTA).
5. Mr. Susanta Mallick, General Secretary, ILTA

After rendition of the State Song of Tamilnadu, Mr. Susanta Mallick was requested to deliver Introductory Speech. In his address Mr. Mallick remembered Prof. S. S. Dutta as one of the great teachers of Leather Technology in his student hood at GCELT. He stated that the book authored by Prof. Dutta titled "An Introduction to the Principals of Leather Manufacture" has been most popular among the different leather institutes throughout the country and ILTA has already printed 2500 copies of this book since its publication around 40 years ago. He remembered the contribution of Prof. Dutta to our beloved association as well as the whole leather fraternity. He also mentioned in brief the activities of ILTA related to Indian Leather Fraternity.

After ending his speech, Mr. Mallick requested Dr. S. Rajamani to honour the hon'ble chief guest Dr. B. Chandrasekaran with a bouquet and swal followed by honouring the speaker Mr. M. Abdul Wahab with shawl & bouquets by Dr. J. Raghava Rao respectively. Thereafter, the dignitaries and the representatives of various Associations, Organizations, Institutes and Industry was requested for garlanding to the portrait of Prof. S. S. Dutta, followed by the Welcome Address delivered by Dr. J. Raghava Rao.

In his address Dr. Rao sincerely remembered the contribution of Late Prof. S. S. Dutta as a teacher of leather technology during his student hood. He welcomed all the dignitaries present who responded ILTA to join hands with the activities and interested to play active role in development of modern Leather Industry. He especially welcomed and offered thanks to Mr. Wahab, hon'ble speaker of the day and the Director of M/s K. H. Group, who is playing a leading role in modern leather industry. He expressed hope that this way ILTA could be able to remain and develop more relevancies to the industry.

Dr. B. Chandrasekaran, Chief Guest of the program expressed his heartful thanks to ILTA for inviting him in the program. In his lecture Dr. Chandrasekaran briefed his experience related to technical growth of leather industry during his tenure as the Director of CLRI. He also recalled the measures started to be taken by CLRI by that time for sustainable and greener technology in leather industry. He especially mentioned that we should be more careful before intervention in the present debate on Leather Vs Non – Leather.

Thereafter, the name of the students was announced who were nominated for felicitation with Prof. S. S. Dutta Memorial

Medal for submitting their projects in M. Tech and B. Tech, Leather and Leather Footwear Technology Examination – 2023 and adjudged as the 'Best Project'. All the awards were handed over to the awardees by the dignitaries present in the event.

a) **Mr. Gokul Ganesh V, Mr. Mohammed Yaser M & Mr. Rudra Shekaran S**, B.Tech, Leather Technology, Anna University, Chennai, project titled "**Enhancing Nap Effect on Nubuck Leather with the help of Foaming Machine**"

b) **Mr. Jeyas Kandhan S**, M.Tech, Leather Technology, Anna University, Chennai, project titled "**Development of Collagen based Bioink from Raw Trimming Waste"**

c) **Mr. Niklesh C, M. Tech,** Footwear Engineering & Management, Anna University, Chennai, project titled **"Designing & Development of Hyper-Elastic Natural Fibre Material for Footwear"**

d) **Mr. Debjit Sen**, B.Tech, GCELT, Kolkata, project titled "**Isolation and Identification of Pigment causing Chrome Resistant Fungi from Wet Blue**"

e) **Mr. Premjit Biswas,** M.Tech, Leather Technology, GCELT, Kolkata, project titled "**An Essential Study on Arsenic Contamination in Raw Goat Skin & Chromium-Tanned Leather**"

Then the names of the three export houses, who would be felicitated by ILTA for securing 1st, 2nd and 3rd places respectively as winner of Best Export Award 2022-23 for their overall export performance in the country as declared by Council for Leather Exports (CLE). It was declared that the Mementoes and certificates would be sent to their registered office by courier within a fortnight.

Names of the houses are as follows:

1st Place - M/s Feng Tay India Group, Chennai
2nd Place - M/s Apache Footwear India Pvt. Ltd., Andhra Pradesh
3rd Place - M/s TATA International Group, Chennai

Thereafter, all the dignitaries lead by Dr. B. Chandrasekaran, joined hands to release the '**IILF-2024 Special Issue**' of Journal of Indian Leather Technologists' Association (JILTA), February' 2024 and the first copy was handed over by Dr. Chandrasekaran to Mr. M. Abdul Wahab.

Mr. M. Abdul Wahab was then invited to the podium for delivering the 5th Prof. S. S. Dutta Memorial Lecture titled ***"Global Leather Sector: Revolutionizing Sustainability, Circularity and way forward"***. He started his lecture with offering heartfelt homage to Prof. S. S. Dutta and then he expressed his gratitude to ILTA for inviting him to deliver the prestigious Prof. S. S. Dutta Memorial Lecture. The whole audience was mesmerized with his highly informative and contemporary lecture. However, a short Q & A session was observed after completion of this highly informative lecture.

At the end of the lecture Mr. Wahab was honoured with a Memento and Citation by Mr. Susanta Mallick.

Due to some unavoidable circumstances, another speaker Mr. Anto Alan PJ was not able to attend this programme. He wished grand success for this programme.

Dr. R. Mohan then offered the Vote of Thanks to the gathering. He on behalf of ILTA offered heartfelt thanks to all the dignitaries present, CSIR-CLRI, GCELT, ILPA as the Co-organizers and to the Indian Leather and Leather Age Magazine as the media partner of the event. He also offered thanks to ITPO and the Event Management group for their all-out support to the event.

Md. Shoaib Khan, Project Associate in CSIR – CLRI acted as the master of the ceremony and he concluded the program with requesting all to join in refreshment arranged outside the seminar hall.

A good audience consisting of more than 100 people were present in the event

The video of the program will be available on the official YouTube Channel and the Facebook page of ILTA within a short while.

13TH MONI BANERJEE MEMORIAL LECTURE

This is scheduled to be held on Friday the 15th March' 2024 at Seminar Hall 19-A of Science City, Kolkata, at 3.00 pm (Registration from 2.30 pm). **Mr. Satya Narayan Maitra**, Business Director, Leather Division – India, Cromogenia Units,

Spain has kindly consented to deliver the 13th Prof. Moni Banerjee Memorial Lecture titled "**Challenges of the Tanners in the changing Socio-Economic Environment**".

Toppers from different Leather & Footwear institutes would be felicitated with Moni Banerjee Memorial Medals and a student of GCELT, Kolkata nominated by a selection committee will be presented with Moni Banerjee Memorial Scholarship on this occasion.

Formal Invitation card through email has been forwarded to all concerned on 27/02/2024 and hard copy of the same has been posted to all on 29/02/2024 respectively.

Detailed report of the programme will be published in the April' 2024 issue of JILTA.

WEBINAR ON "LEATHER VS VEGAN" ORGANIZED BY ILTA

A webinar was organized by our association over digital platform, on a very contemporary issue related to leather fraternity, on 24th February' 2024. The topic of the webinar was "whether Vegan should be considered as Leather". **Mr. Gualtieri Gualberto, CEO, M/s C & E Ltd.** delivered a lecture titled **"Vegan is Leather?? Leather vis-à-vis Artificial Leather – A Technical Study".** The lecture was highly informative and new way forward.

Many reputed industrialists and scholars from different institutes participated in the Q & A session of the webinar.

Summery of the discussion taken place in the webinar is described under the HRD corner of this issue (Page No.- 38)

The video of the program will be available on the official YouTube Channel and the Facebook page of ILTA within a short while.

HEALTH CARE BENEFIT FOR ILTA MEMBERS

As per decision taken in the 562nd Meeting of the Executive Committee, ILTA is going to launch Health Care Benefits for all the Members of our Association in collaboration with M/s Narayana Health w.e.f 1st April, 2024.

This is an initiative of the HRD Committee of ILTA.

For benefits and other details of this project kindly follow the HRD Corner (Page No. - 37).

DIGITALIZATION OF ILTA PUBLICATIONS

As per decision taken in the 562nd Meeting of the Executive Committee, ILTA is going to launch a digital platform for availing all its publications including Leather Text Books, JILTA and other different articles from renowned authors of Leather Fraternity online against a marginal cost.
This is also an initiative of the HRD Committee of ILTA.

Work on this project is under process. The details of the same will be published very soon.

MANAGEMENT DEVELOPMENT PROGRAM

CSIR – Central Leather Research Institute (CLRI) in association with ILTA, CLE (ER), ILPA and Ministry of MSME is going to organize a Management Development Training Program (MDP) for the Owners, CEOs, Managers, Supervisors of the Leather Fraternity for Technological Advancement in Greener Leather Sector.

The program will be organized in two sessions. The first one from **5th – 8th March, 2024** and the second one from **11th – 15th March, 2024**. All the sessions will be conducted in the **Conference Room of ILTA** and of 2 hour's duration from **11.00 am** to **01.00 pm**.

Details report of the program will be published in the JILTA April, 2024 issue.

(Susanta Mallick)
General Secretary

YOUTUBE CHANNEL & FACEBOOK PAGE OF ILTA

An official **YouTube Channel** namely **ILTA Online** and a **Face Book Page** namely **Indian Leather Technologists' Association** has been launched for sharing the activities of our Association since November' 2020 and July' 2021 respectively.

You may find all the Lives / Video recordings of different Seminar, Symposiums & Webinars on both of these social medias along with our website **www.iltaonleather.org** time to time.

You are requested to kindly do **Like** & **Subscribe** the YouTube Channel and **''Follow'** the FaceBook Page to get regular updates on the activities of our Association.

PUBLISH YOUR TECHNICAL ARTICLE

Faculties, Research Scholars and students of various Leather Institutes may wish to publish their Research / Project papers in an Article form in this monthly technical journal, JILTA.

Interested author may sent their paper (in MS Word format) along with a PP Photograph and Contact details like Email, Mobile etc. to our email IDs : admin@iltaonleather.org / jiltaeditor@gmail.com

Members are requested to :-

a) Kindly inform us your '**E-Mail ID**', '**Mobile No**', '**Land Line No**', through E-Mail ID: admin@iltaonleather.org or over Telephone Nos. : 24413429 / 3459. This will help us to communicate you directly without help of any outsiders like Postal Department / Courier etc.

b) Kindly mention your **Membership No.** (If any) against your each and every communication, so that we can locate you easily in our record.

RECEIVING PRINTED COPY OF JILTA EVERY MONTH

We have started to post Printed copy of JILTA from April' 2022 to members and all concerned as it was before Covid period. Simultaneously we have been sending the e-copy of JILTA through email also to all the concerned receivers.

If you are not receiving JILTA by Post or through email, may please verify your Postal Address and/or Email Id with our office at the earliest.

General Secretary and the Members of the Executive Committee are available to interact with members at 18.30 hrs, at our Registered Office on every Thursday

Moloy Dutta

(10th April' 1956 - 2nd February' 2024)

Moloy Dutta, a well-known leather technologist and a soft-spoken person, was born on 10th April, 1956 at his native town Naihati as a son of an Income Tax Officer.

He started his education at Bhatpara High School and passed the H S examination in 1972. Thereafter, he got admission in erstwhile College of Leather Technology and from there he passed B.Sc.(Tech) in 1976 and obtained first class first class degree. He was a "Gold Medalist" from Calcutta University.

As an avowed chemist, he had immense passion for chemistry. He had a running small laboratory at his residence is a testimony of his passion for the subject.

He was a well-versed in "Dye-Matching" and had turned himself a proverbial figure in the leather industry throughout the country. He was a well-accepted man and toured throughout the country on behalf of Chemcrown (I) Pvt. Ltd. and also, one of the Directors of the company.

After quitting the job, he engaged himself as a consultant and served many concerns & later, he started his own business of Dyes.

He had been suffering from acute kidney problem and had been put on dialysis for 4 years & ultimately, he succumbed to the ailment on the fateful day of 2nd February, 2024, leaving behind his wife, only son and innumerable admirers.

We pray to almighty to bestow enough courage to his family and near and dear ones to bear with this untimely bereavement and let his soul rest in peace.

Solidaridad

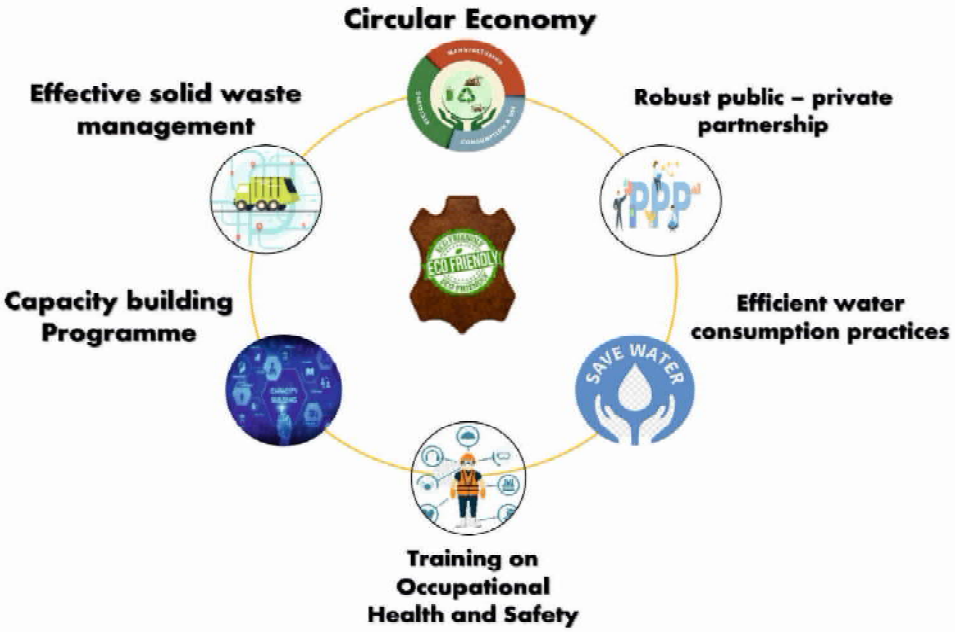
With over 50 years of experience in developing sustainable solutions to make communities more resilient, Solidaridad has been working on many different issues, from supporting marginalized communities to fostering a more sustainable supply chain.

Solidaridad

switchasia
GRANTS PROGRAMME

EFFECTIVE WASTE MANAGEMENT AND SUSTAINABLE DEVELOPMENT OF MSME TANNING COMPANIES IN KOLKATA LEATHER CLUSTER (BANTALA)

2022-2023



PROJECT PARTNERS IN ASIA

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Solidaridad

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GRANTS PROGRAMME

RESIDUE TO RESOURCE : A JOURNEY OF TANNERY WASTE TRANSFORMATION

Abstract :

The leather production process generates significant waste, particularly during the liming and fleshing stages, leading to environmental pollution and financial burdens for tanneries. Solidaridad, through the Switchasia project named "*Effective Waste Management and Sustainable Development of the MSME tanning companies in Kolkata Leather Cluster (Bantala)*", has introduced a sustainable solution for the Kolkata Leather Complex by extracting tallow from fleshing waste. This process involves thermal hydrolysis and acidic purification to separate tallow from the protein-rich residue. The extracted tallow and residue offer commercial opportunities, including soap, paint, and lubricant production. Implementing this initiative not only reduces waste disposal costs but also promotes environmental sustainability and revenue generation for tanners, making the Kolkata leather cluster cleaner and more sustainable. This approach exemplifies the conversion of waste into a valuable resource, supporting a circular economy and enhancing the sustainability of the leather industry.

Introduction :

In the Leather manufacturing process, Liming is one of the most widely practiced and essential method in the tanning industry, typically followed by the fleshing operation. This process has the pivot role of forming high pollutants in the effluent. During fleshing operation, fatty tissues are removed from the flesh side of a hide/skin, resulting in a significant amount of solid waste, accounting for approximately 85% of a beamhouse's and 55% of total tannery waste. This waste contains significant amounts of calcium oxide, sulphates, and small quantities of amines. Historically, it has been disposed of in landfills without treatment, resulting in severe land pollution and groundwater contamination. The environmental impact arises from the putrefaction of this waste in landfills, leading to the release of methane and other greenhouse gases. Additionally, the transportation of this waste by road has caused significant pollution and expenses, which is a serious concern for tannery owners.

Pic.01 - Fleshing Operation

Materials and Methods :

Following a successful demonstration of a 150 kg capacity Tallow Extraction Unit at the CLCTA premises, Solidaridad has established and demonstrated a 4-ton capacity Tallow Extraction Pilot Demonstration Unit at Indian Tanning Industries Pvt. Ltd. This demonstration aims to showcase the business case model and long-term viability for those considering commercial engagement with the technology.

The pilot unit comprises five essential components.The first component is the Fleshing Pit, designed to collect fleshing waste and prepare it for further processing. The second component is a Conveyor Belt connected to the pit, facilitating the transfer of fleshing waste to the cooking vessel without the need for manual labor. The third component is a Mechanical Stirrer, which continuously agitates the mixture inside the vessel to ensure homogeneity before settling. The fourth component is an insulated stainless-steel vessel, where the entire process is conducted for approximately 2.5 hours at a temperature not exceeding 75˚C. The fifth and final component is a

specialized filter press, used to separate the protein-rich residue and drain excess liquid from the mixture.

Pic. 02 – Tallow Extractor at ITI

After the cooking process ceases, the triglyceride matter is easily retrieved by opening a designated valve at the top. This material undergoes acidification with industrial-grade inorganic Acid, leading to the separation of tallow from impurities. Through controlled acidification and meticulous filtering, clear and yellow-colored tallow in liquid form is obtained. The settled residue is then directed to a protein pit by opening another valve at the base of the cooking chamber. Subsequently, the protein-based residue is transferred to a filter press for overnight dewatering, resulting in the formation of 95% dried protein-rich chunk.

Results and Impacts :

Following the completion of the process, the extracted tallow, the residual protein-rich cake, and the discharged float from the filter press are sent to laboratories for testing, yielding highly encouraging results.

Tallow :

Test Findings of Tallow			
Sl. No.	Test Parameter	Unit	Results
1	Acid Value	-----	74.3
2	Volatile Content	%	0.57
3	Non-Volatile Content	%	99.43
4	Sulphide Content (S^{-2})	%	0.011
5	Triglyceride Content (Fat)	%	98.94

Protein Residue :

Test Findings of Protein Residue			
Sl. No.	Test Parameter	Unit	Results
1	Protein Content	%	21.39
2	Lime Content (as CaO)	%	0.114
3	Volatile Content	%	62.09
4	Non-Volatile Content	%	37.91
5	Sulphide Content (S^{-2})	%	0.012
6	Triglyceride Content (Fat)	%	17.01

Discharges float :

Test Findings of Discharges Float from Filter Press			
Sl. No.	Test Parameter	Unit	Results
1	pH Value	-----	7.33
2	Total Suspended Solids (TSS)	mg/l	70
3	Total Dissolved Solids (TDS)	mg/l	1310
4	Calcium as CaO	mg/l	1081
5	Sulphide Content	mg/l	170.1

In addition to the test findings, we have also categorized the percentage of tallow/oil that can be extracted based on the substrate type and origin. Through our experience, we have found that the maximum extraction rate from cow substrate ranges from 8% to 9%, from Katta it ranges from 7% to 8%, and from Goat (Indian origin) it is less than 5%.

Cost Benefit Analysis of tallow extraction Unit :

Fleshing waste poses a dual challenge for tanners, serving no purpose in their operations while presen-ting a logistical headache for removal from tanneries. The costs

associated with its unsustain-able disposal and transportation are considerable.

For an aspiring entrepreneur, it has been demonstrated that the seemingly worthless daily accumulation of fleshing can be transformed into a lucrative venture with a profitable daily margin. Establishing a production unit of comparable capacity requires factoring in costs such as labor, transportation for collecting fleshings from multiple tanneries, boiler expenses, and the electricity consumption of the tallow extraction unit. Remarkably, the return on investment can be realized within a mere 60 working days.

Benefits :

While there are initial costs associated with adopting this initiative, these costs can be swiftly recouped within two to three months of regular extraction. Both the extracted tallow and protein-rich residue offer significant commercial potential:

1. Abundant in natural fatty acids and possessing moisture-retention properties, these materials can be further processed to create a viable ingredient for soap production.

2. Rich in triglycerides, they can undergo additional treatment to become suitable for the paint industry.

3. Due to their high melting point and anti-friction attributes, they can be further processed into industrial lubricants, offering a more cost-effective alternative to synthetic options and appealing to various industrial lubrication needs.

4. The protein-rich residue from the filter press, a byproduct of the extraction process, can serve as an economical ingredient for animal feed production.

Conclusions :

Leather processing is unique of its kind in transformation from a meat industry byproduct to become a lifestyle material of our daily use. By nature, this is the most ecofriendly and sustainable material.

But due to lack of knowledge on managing the solid waste the whole leather industry gets blamed as polluting. This approach of ***Waste to Wealth*** conversion not only opens up new possibilities of revenue generation, but also makes the Kolkata leather cluster more sustainable.

As the tallowflderived from fleshing waste, byproduct of the leather industry, making it more sustainable resource. Utilizingflthis tallowflreduces waste and promotes a **Circular Economy**.

PROMOTING CIRCULARITY IN TAMIL NADU LEATHER CLUSTERS FOR SOLID WASTE MANAGEMENT

Solidaridad

switchasia GRANTS PROGRAMME

An EU-India sustainability project 'Promoting Circularity in the Tamil Nadu Leather Clusters for Solid Waste Management' was launched by Thiru Siva. V. Meyyanathan, Minister for Environment and Climate Change, Tamil Nadu and Ugo Astuto, Ambassador of the European Union to India, in Chennai, Tamil Nadu.

The project is funded by the European Union under its SWITCH-Asia Programme, and Solidaridad Regional Expertise Centre (SREC) along with its partners - Politecnico Internazionale per lo Sviluppo Industriale ed Economico (PISIE), Indian Finished Leather Manufacturers and Exporters Association (IFLMEA), Council for Leather Exports, Tata International Limited and the European Union (EU) – will work with 100 tanneries in the 42-month initiative.

The project will follow four key approaches:

- Solidaridad will work with its partners and technical experts to introduce techno-commercially viable practices in the tanning processes on water efficiency and pollution reduction.
- Establish scalable pilot demonstration units on 'Waste to Value' citing examples of circularity.
- The capacities of the workers will be developed on innovative waste management solutions.
- Sectoral cooperation and market linkages for 'Waste to Value' products will be facilitated. A digital portal as Sustainability Matrix will be developed.
- A public-private partnership platform will be established that represents the interests of key stakeholders. These stakeholders will come together to create a roadmap for improving waste management at the cluster level.

The event brought together participants from India and EU, the Council for Leather Exports, key industry leaders and representatives from development partner communities

In line with Tamil Nadu's effort to transition to a resource-efficient and circular economy model, this initiative supports clusters to adopt cleaner and sustainable production practices and entails pilot demonstration of sustainable technologies in tanneries.

Application of Ozone in Reduction of Pollutional Load and Removal of Colour – Innovative Technologies

Dr. S. Rajamani

[1]Vice President, Indian Leather Technologists'Association (ILTA), Chennai,

ABSTRACT

The tanneries in India and most of the Asian countries use large amount of poor-quality chemicals in semi-finishing and finishing operations. In wet finishing operations different types of fat liquors, dyes and non-degradable chemicals are used and the residual chemicals discharged as waste in the effluent. The effluent from semi-finish to finishing operations contains pH in the range of 4-5, COD in the range of 4000-6000mg/l, color in the range of 1500–2000 in Platinum-Cobalt Color Scale (Pt-Co). These discharge causes occupational health and safety issues, corrosion in the pipeline, increase in emission of H_2S when it mixed with effluent from beamhouse operation such as sulfide liming and deliming. Conventional physiochemical and biological treatment process could not achieve discharge parameters such as COD, colour in the treated effluent.

With a view to address the challenges of odour emission, non-degradable COD, Colour, etc. in the effluent and to meet new discharge standards and guidelines, an advanced oxidation system with ozone has been studied and developed in pilot and commercial scale. This unique and first of its kind system is being utilized in a tannery cluster with Common Effluent Treatment Plant (CETP) for a 3000m^3/day in South India.

Keywords : Advance oxidation, Ozone treatment, Colour removal.

1. Introduction

The tanneries in India and most of the Asian countries use large amount of poor-quality chemicals in semi-finishing and finishing operations. In wet finishing operations different types of fat liquors, dyes and non-degradable chemicals are used and the residual chemicals discharged as waste in the effluent. The effluent from semi-finish to finishing operations contains pH in the range of 4-5, COD in the range of 4000-6000mg/l, color in the range of 1500–2000 in Platinum-Cobalt Color Scale (Pt-Co). The important challenges in leather process and effluent treatment are :

- Control of H_2S and other odour emissions from beam house operations.
- Increase in colour and non-degradable COD in the effluent due to use of non-degradable chemicals and dyes.
- Colour removal is being insisted upon by pollution control authorities and Municipal Administration.
- Difficulties in reduction of non-degradable COD from 400-500 mg/l to less than 250mg/l.
- Enforcement of stringent environmental/discharge norms (i.e., BOD less than 10mg/l, SS less than 20mg/l, etc.) for discharge into water bodies and rivers.
- Sustainable recovery of chemicals and water for use under circular economy.

With a view to address the challenges of odour emission, non-degradable COD, Colour, etc. in the effluent, occupational health and safety measures and to meet new discharge standards and guidelines an advanced oxidation system with ozone has been studied in lab and pilot scale and adopted in a tannery cluster of 120 units with Common Effluent Treatment Plant (CETP).

The advance oxidation system has been upscaled for full-scale operation in such a way that the treated effluent is free from odour and improves the occupational health & safety condition in tanneries and effluent treatment plants. This advance oxidation system could achieve the removal of colour and meet new discharge parameters (i.e., BOD - <10mg/l, COD - <250mg/l & SS - <20mg/l) except Total Dissolved Solids (TDS).

The sequence of the new treatment process is : Pre-aeration with ozone treatment in dye bath effluent → Mixing with other sectional streams → Primary treatment for removal of suspended matters and sludge → Secondary biological

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treatment → Tertiary treatment → High-rate advance oxidation for reduction of colour and non-degradable COD.

The advance oxidation system designed and implemented for a capacity of 150m³/hr is fully operational with onsite generation of oxygen and ozone. The oxygen generation plant supplies 2000m3/hr of oxygen at 93% purity and ozone is generated for a capacity of 30kg/hr in two modules each of 15kg/hr. The application of advance oxidation system for colour removal and non-degradable COD is first of its kind in terms of technological development. There is scope of replicability in many of the industrial units with effluent treatment plants with the scope for recover and reuse of water.

2. Materials and Method

For the development of high-rate advance oxidation system is followed after basic physiochemical and biological treatment[1-3]. The first stage is generation of oxygen from atmospheric air using oxygen generator with a ratio of 100:5 (i.e., Atmospheric air → Oxygen in m³/hr). The oxygen is stored in a separate compartment and further ozone is generated from oxygen using ozone generator at a ratio of 100:15 (Oxygen → Ozone in m³/hr).

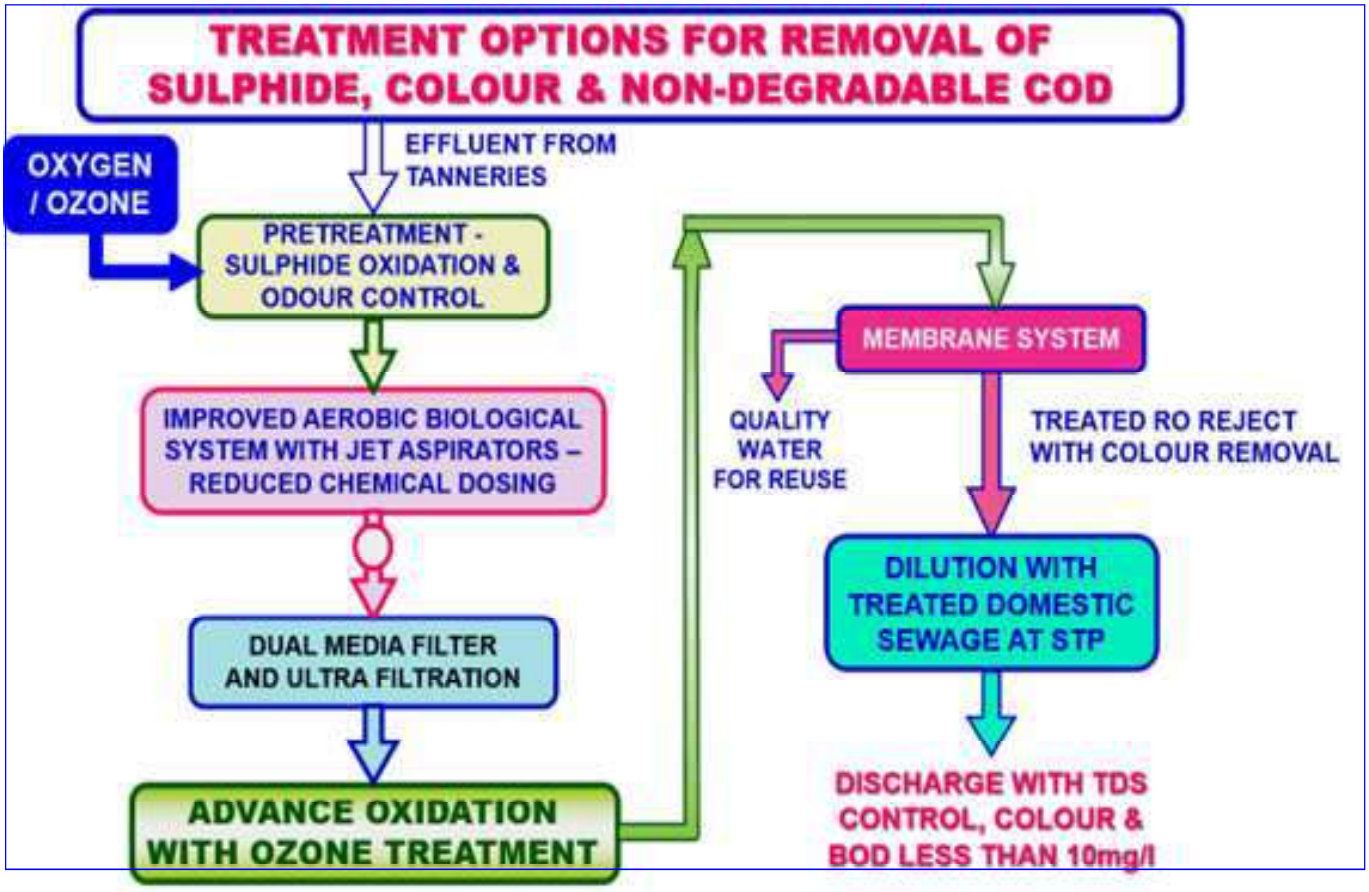


Fig.1 : Treatment options for removal of sulphide, colour & non-degradable COD

The ozone is distributed through diffusers in the oxidation compartment with a detention time of 60-90 minutes. The reduction in COD is from 400mg/l to <250mg/l and colour is reduced from >500 Pt-Co to less than 200 Pt-Co units & the ozone treated effluent looks like a clear water. The dissolved oxygen level in the final treated effluent is increased to 5-7 ppm and creates a pleasant & safety atmosphere in the tannery cluster & treatment plant[5].

Liquid Oxygen and Ozone are being introduced in equalization-cum-mixing tanks in tanneries and effluent treatment plants for the reduction of sulphide and to improve the performance of aerobic biological system[5]. The view of the commercial scale system is shown below :

Fir.2 : Ozone treatment is found more effective and safer for application than liquid oxygen

Prior to the Advance Oxidation system an Ultra-Filtration system has been developed and introduced for the reduction of suspended solids from the level of about 50-100mg/l to less than 10mg/l and improve the clarity[4-5]. The view of the Ultra-filtration (UF) system implemented prior to ozone treatment is shown in the following figure.

Fig.3 : Ultra-filtration (UF) system

The sequence of advanced oxidation using ozone for removal of colour & non-degradable COD is given below:

- Generation of Oxygen from Atmospheric air using Oxygen Generator with ratio 100:5 (i.e., Atmospheric Air ⟶ Oxygen in m3/hr).
- Generation of Ozone from Oxygen at the ratio 100:15 (Oxygen⟶ Ozone in m^3/hr).
- The Ozone is distributed through diffusers in Ozone treatment tank with detention time of 90-120 minutes.

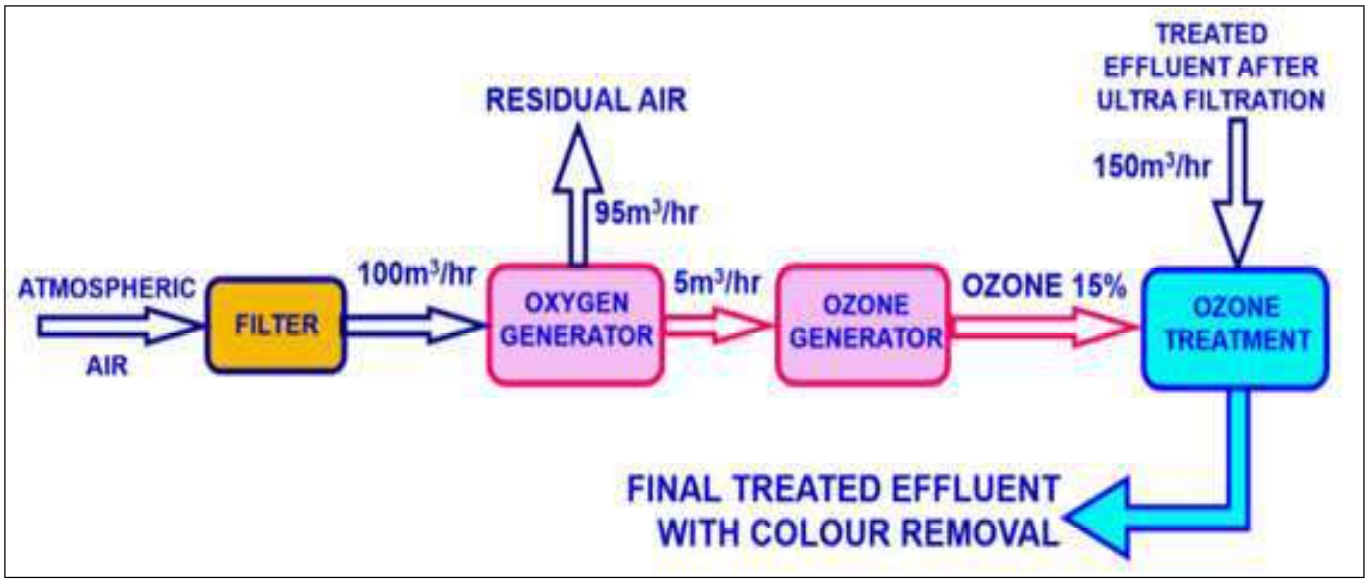


Fig.4 : Sequence of advanced oxidation using ozone for removal of colour & non-degradable COD

The view of full-scale advance oxidation system with ozone treatment implemented with a capacity of 3000m^3/day.

Fig.4 : Ozonation System - Pre-Aeration & Ozone Reaction Chamber and Treated Effluent Storage Tank

3. Results and Discussion

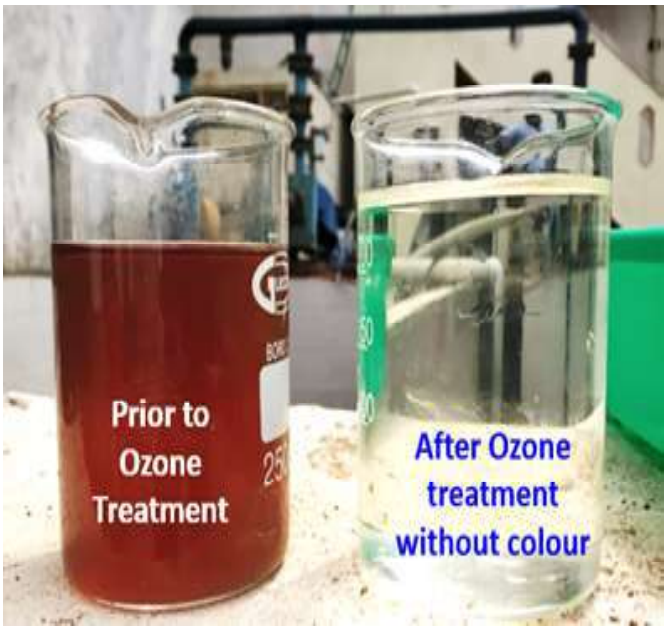
The operational performance of advance oxidation system starting from post aerobic treatment, tertiary treatment, rate of oxygen generation and conversion into ozone, application of ozone have been studied at commercial scale system with a capacity of 3000m^3/day. The performance of the overall system in terms of reduction in soluble COD, Colour, Suspended Solids, (SS), BOD is given below :

Sl. No.	Treatment unit	Parameter	Inlet	Outlet	Percentage reduction
1.	Aerobic system with Secondary Clarifier	COD	2500 mg/l	600 mg/l	76%
		SS	400 mg/l	200 mg/l	50%
		Colour	>550 Pt/Co	>500 Pt/Co	10%
2.	Tertiary treatment units – Dual Media Filter (DMF) and Ultra-Filtration (UF)	COD	600 mg/l	450 mg/l	25%
		SS	200 mg/l	<10 mg/l	95%
		Colour	500 Pt/Co	400 Pt/Co	20%

It may be noted that COD and SS are considerably reduced during the biological treatment and tertiary treatment respectively. However, colour reduction is only 10-20% during the biological treatment and conventional tertiary treatment units such as DMF and UF. Hence, it is considered necessary to adopt advance oxidation treatment using ozone to reduce colour and corresponding non-degradable COD. The advance oxidation system designed and implemented for a capacity of 150m^3/hr is fully operational with onsite generation of oxygen and ozone. The oxygen generation plant supplies 2000m3/hr of oxygen at 93% purity and ozone is generated for a capacity of 30kg/hr in two modules each of 15kg/hr.

The ozone is distributed through diffusers in advance oxidation treatment with a detention time of 60-90 minutes. The COD is reduced from the range of 400-450mg/l to less than 250mg/l. The colour is reduced from more than 500 Pt-Co to less than 200 Pt-Co units and the ozone treated effluent looks like a clear water. The dissolved oxygen level in the final treated effluent is increased to 5-7 ppm and creates a pleasant and safe atmosphere in the tannery cluster and effluent treatment plant area.

The visual of the ozone treated effluent and consolidated performance statement are shown below:



Parameters	Inlet Parameter	Outlet Parameter
Rated flow	150m3/hr	150m3/hr
COD	400mg/l	< 250mg/l
DO level	1-2 ppm	4-6 ppm
Colour	500 Pt/Co	< 200 Pt/Co
Clarity	Turbid	Clear

Fig.5 : Visual of the ozone treated effluent and consolidated performance statement

The application of advance oxidation system for colour removal and non-degradable COD is first of its kind in terms of technological development. The capital cost of the system oxygen and ozone generation system excluding basic physiochemical and conventional biological treatment works out to 1.00 Million Euro for a capacity of 3000m^3/day. The effluent treatment system serves for 120-member tannery units. The operating cost of ozone treatment is about 900 Euro per day and borne by the member tanneries. There is scope for replicability of advance oxidation treatment using ozone in many of the industrial effluent treatment plants to meet new discharge norms as well as for the plants planning to recover and reuse of treated effluent.

4. Conclusion

The advance oxidation system with ozone is successfully adopted in a cluster of 120 tanneries with a Common Effluent Treatment Plant (CETP) for a capacity of 3000m^3/day. The DO level in the treated effluent is increased to 5-7 ppm and make it fit for discharge into receiving bodies and improved performance of Reverse Osmosis (RO) in the water recovery process. There is scope for replication of State-of-Art technologies for removal of H_2S, odour, colour and recovery of water from tannery waste.

5. Acknowledgements

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- Government of India Organizations.
- CSIR - Central Leather Research Institute (CLRI), Chennai, India.
- National Mission for Clean Ganga (NMCG), India.
- Government of Tamil Nadu, India.
- United Nations Industrial Development Organization (UNIDO)
- IUE Commission of IULTCS
- Asian International Union of Environment (AIUE) Commission, Chennai.
- Cluster of Tanneries with CETPs in India & Abroad.

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ANNOUNCEMENT

ILTA LAUNCHED HEALTH CARE BENEFIT FOR ITS MEMBERS

Indian Leather Technologists' Association (ILTA), a member society of IULTCS and a pioneer organization in the field of leather industry, has now tied up itself with the hospital the Narayana group for Eastern India with a view to giving Indoor, Outdoor and Medical testing services to all of its registered (both life and ordinary) members at concessional rates.

Offer & Discount :

1. **OPD Service:** 10% discount on Doctor's Consultation, Prevailing Health Check-ups available at hospital, day care procedures, Investigations except outsourced tests.
2. **IPD:** fl5% on total IPD billing as per prevailing hospital tariff excluding medicine / consumable / implant / outsource & blood bank services. (Not applicable on insurance cases/ Govt scheme / ESIC and any other schemes & promotional package or offers & discounts).
3. **Ambulance:** As per Availability & as per Narayana Health ambulance policy & charges.
4. **Payment Terms:** Payment should be only in Cash Mode, Debit Card, Credit Card, NEFT/RTGS/ IMPS. No cheques shall be accepted.

These facilities will be extended to its existing members only. Six family members including spouse, two children and dependent parents will be entitled to avail these facilities. The persons concerned are advised to contact Mr. Bibhas Chandra Paul, OSD (Mob. No. 9432553949) of the association for further details.

ILTA will issue a Health Card in favour of each Member. Thus, Members are requested to collect the prescribed format to avail this facility either from ILTA Office or through email.

ILTA IS NOW ON DIGITAL PLATFORM

Indian Leather Technologists' Association is now set for digitalization of its all publications. The members and non-members alike are eligible for this facility. The association has been publishing number of books on leather & footwear technology since inception. Also, the Association has a great collection of number of articles from renowned personalities & scientists of leather fraternity worldwide which has been publishing in our only technical journal namely "Journal of Indian Leather Technologists' Association (JILTA)".

All the above facilities will be available to all the interested peoples on digital platform through the official website of the Association very soon.

REPORT

WEBINAR ON 'LEATHER VS VEGAN' ORGANIZED BY ILTA - A REPORT

Indian Leather Technologists' Association organized a "Webinar" (On Zoom Platform) on 24th February, 2024, on the issue whether "Vegan" be considered as Leather. Mr. Gualtieri Gualberto, CEO, M/s C & E Ltd. delivered a speech on the topic before a well-attended august audience. He was quite categorical in his speech and he held threadbare discussion on this burning issue.

He raised the issue before the audience to make a vehement protest against putting the "tag" of leather to be allowed for any kind of synthetic. He referred too that no European Country allow synthetic to be tagged as Synthetic Leather. He suggested to be united on the issue and put the matter to the government to do the needful to save the industry from further annihilation. He emphasized that "We are not killing animals for feeding our industry, on the contrary we are using dairy bi-product" as raw materials of our industry.

From our Association, we are categorical that we will go for debate shortly on the issue and also, will put the saga before the social media for the public at large.

INTERNATIONAL UNION OF LEATHER TECHNOLOGISTS AND CHEMISTS SOCIETIES
(www.iultcs.org)

IULTCS FOCUSED ON THE 38TH CONGRESS TO BE HELD IN LYON, FRANCE IN 2025

IULTCS, the 126-year-old International Union of Leather Technologists and Chemists Societies, holds a world congress every 2 years. It set targets for the steps to be followed by the tanning industry in the 2024-2025 period and for the 38th Congress to be held in Lyon, France in September 2025.

Founded in London in 1897, IULTCS, the International Union of Leather Technologists and Chemists Societies, currently represents approximately 3000 individual members and 19 member associations worldwide. It is a scientific institution formed by leather engineering in the academy that determines strategies and produces solutions for the global leather industry. The union organization, which organizes international congresses in various countries every two years and enables the production of modern technologies and the development of chemical methods in leather production, has determined its strategies for the 2024-2025 period.

INTERNATIONAL UNION OF LEATHER TECHNOLOGISTS AND CHEMISTS SOCIETIES
(www.iultcs.org)

Its unique structure consisting of collagen fibers made by nature and providing extraordinary properties, which has ensured its compatibility with the high demands of leather quality requirements and within the framework of sustainable and environmentally friendly processes, is an inimitable science. Focusing on the congress it will organize in 2025, IULTCS has set principles for its sustainability goals for this unique craft since the existence of humanity:

Empowering the role of the IULTCS Commissions: to boost the effectiveness of our existing commissions and to explore the establishment of a new commission for sustainability to address the emerging challenges and to drive positive change within the industry:

- Communicating leather as an irreplaceable material:flpushing back against the falsehoods widely shared on social media, with facts and scientific arguments.

- Global collaboration for Research and Innovationflbetween international research institutions and industry partners to promote continuous innovation in leather technology and measurable impact in processing.

- Education and skill developmentflwithin the leather sector. Support programs that enhance the knowledge and capabilities of professionals, ensuring a skilled workforce for the future.

- Youth Engagement and Mentorship: cultivating the next generation of leather scientists and professionals by promoting youth engagement initiatives such as the YLSG. Collaboration between our experienced members and the emerging talent to ensure as seamless a transfer of knowledge as possible.

- Environmental stewardship and responsible practicesflalong the leather value chain.

(magazineleather.com – 06/04/2024)

Valorisation of Invasive Species - For Leather, Fur, Bristle, Meat and By-Products (Part -14)

Invasive Deer, Sheep and Goat in New Zealand

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Freelance Leather Technologist & Consultant, Chennai

Red Deer

New Zealand is inhabited by 25 species of indisputably wild, introduced mammals, brought into the country from beyond its frontiers, largely between 1850 and 1910. Additionally, several domesticated species also exist as feral populations. Around 173-113 years have elapsed in the interim, since the release of the non-native animals, into a myriad number of locations, both in the North and South Islands. The liberations have culminated in the extraordinarily fast adaptation of the animals to the climate, terrain and topography of their adopted home. Though some species attained insubstantial distribution, a sizable number among them are now widespread, resulting in adverse ecological and economic impact for the island-nation. As many as 13 of the 25 species are ruminants; these include deer, goat and sheep. While two species are no longer seen in New Zealand (Axis deer and Moose), a significant number of others have assumed pestiferous dimensions.(1)

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Red deer were released in New Zealand, along with other nonindigenous flora and fauna, by voluntary associations, known acclimatisation societies, who believed that these elegant mammals would adapt to their new home through acclimatization, and hence enrich the plant and animal diversity of the country.

Lord Robert Petre of Thorndon Park, Essex is credited with having sent the first ever breeding pair of red deer to New Zealand in 1851. Over 800 individuals were subsequently set free in the pristine land of rolling green hills and sweeping vistas, between 1851-1926. The hoofed ruminants adapted well to the conditions in their new habitat. With abundant food, copious water, no threat from predators and no competition from herbivores of similar or bigger built, they multiplied exponentially, compelling governmental control operations to commence in 1931. According to available figures, 1,124, 297 red deer were killed by NZ governmental agencies between 1931-75.(2)

Just under a decade later, in 1860 **European fallow deer** became the second species of the herbivore to be inducted into New Zealand. The animals were introduced to James Island, where early pioneers wished to establish opportunities for deer stalking, which had been a privileged sport for English nobility since medieval times. Some stags and does swam to and established a population in the nearby Sidney islands. Subsequently in the 1990s, capitalizing on periodically compromised fencing in farms, more fallow deer escaped, met other escapees, as well as those legally and illegally released, to establish herds.

With distinctive flat "paddled" antlers more similar to those of moose than red stags, fallows display the most diverse range of colours of all deer species, ranging from white, to various shades of brown and black as well as several prized "chocolate" coloured animals, stalked and hunted every season.

Today, the attractive but destructive artiodactyls are implicated in ring barking (excoriating and eating the bark) of mature trees, leading to their early demise. The mammals leave behind in their wake, bare dirt and roots, after devouring the entire volume of leaf litter on forest floors, which sustain native insects, reptiles and molluscs. Because of their far-reaching impact on agriculture and forests, through overgrazing and at times, through foraying into farms to consume crop, fallow deer are considered an invasive species. This stigmatisation is in spite of enjoying partial protection, throughout the spectrum of their habitation, on account of being a recreational hunting and valuable farming resource.(3)(4)

Indigenous to Nepal, Sri Lanka and India, **Axis deer** were transported to Goodwood Bush near Palmerston, in 1867, to be untrammelled. These obligate herbivores, **known as Chital in the Indian sub-continent**, multiplied prolifically and caused significant damage to standing crop, inflicting serious losses to farmers. Consequently, by the mid-1990s, they were extirpated. Subsequent attempts to re-introduce axis deer at three different locations - Kâpiti Island (1893), Tongariro National Park (1907) and Dusky Sound (1908) – proved unsuccessful. By 1920, chital were no longer seen in New Zealand.(5)

In 1875, a New Zealand banker and financier, Falconer Larkworthy, imported to New Zealand from Ceylon, the two, first ever, **Sambar deer**. With this forward-facing and innovative introduction, Larkworthy catalysed an exciting niche income avenue through deer-tourism and recreational hunting, to benefit succeeding generations of farmers, in the coastal region of Manawatu.

Reinforced by several more releases at later dates, Sambar herds stabilized in their new domain in the North Island. At present time, the two predominant populations of wild sambar deer are seen in the Bay of Plenty area and in the Whanganui/ Manawatu region.

With the NZ Department of Conservation, removing its earlier strictures on Sambar hunting, the iconic deer, which grows to a shoulder height of 1.2m (hinds) to 1.4m (stags) and weighs 160kg (hinds) to 250kg (stags), can be hunted, without bag limit, year around in the country. Sambar antlers are dense and solid. They are therefore often coveted by both trophy hunters and knife makers all over the world.(6)(7)(8)

The first introduction of **sika deer**, which are indigenous to Manchuria in China, into New Zealand took place in 1885. In the open, wind-swept elevations of the Southern Alps, the medium–sized ruminants, could not establish themselves. Yet another unofficial arrival, in 1900 was confined to zoological enclosures. It was finally in 1904, when Herbrand Arthur Russell, 11th Duke of Bedford shipped a gift of six sika deer from his Woburn Deer Park Estate in Bedfordshire, to the New Zealand Government, that the introduction was successful. In

January 1905, the sestina were set free, east of the North Island's Lake Taupo, in the Poronui area of the Kaimanawa Ranges.

The topography and vegetation, in central North Island, have ensured that this area still remains the principal habitat for sika in New Zealand. Currently a herd with substantial numbers, occupying a single near-continuous range, remains concentrated in the area.

Despite the eye-catching and charismatic sika, with their mahogany to dark pelage and 8-pointed antlers, being highly valued for wall mounting - even though there are no governmental regulations limiting the numbers of the species, which can be harvested - current hunting pressure is insufficient to prevent high C. Nippon (sika) densities, other than in the most readily accessible areas.

Sika deer are the second most widespread cervid species after red deer in New Zealand. Their area of distribution is in excess of 80,000 square km.

Only 50 -110 cm tall at the shoulder with poor venison yield and trophy quality, sika are marketed by commercial hunt operators as ideal first trophies for novices and amateurs and as affordable "blue ribbons" for youth hunters. The tepid hunting demand is insufficient to control the high numbers of the deer, which, by their grazing habit, change the composition and structure of native vegetation significantly, thereby threatening the fragile biodiversity of New Zealand. At the moment, the burgeoning numbers of sika deer are ensuing poor outcomes, both for hunting and conservation, due to negligible funding to intensify proactive action against the undesirable ramifications of the herds on native vegetation.(9)(10)(11)(12)

The British Crown colony New Zealand officially came into existence on 3, May, 1841. Early European settlers in the "Land of the Long White Cloud " , particularly those in the South Island believed, that the Southern Alps, which was their pride and joy, was gloomy and depressing, without any large quadrupeds foraging or lumbering around. This was one of the principal reasons for many species being introduced into the island-nation. It was again, Herbrand Arthur Russell, 11th Duke of Bedford, the President of the Zoological Society of London from 1899 to 1936, who gifted the New Zealand government in 1903, with three female and an equal number of male **Himalayan Tahr**. One perished during the arduous trans-continental, two– month long voyage. The five survivors - three nannies and two bulls- were released at Mount Cook Village, near the Hermitage Hotel, in January 1904.

The Duke of Bedford was instrumental in effecting a second shipment of Himalayan Tahrs to New Zealand in 1909. The Duke's original intention had been to send eight of the ungulates to Auckland by sea. Two animals escaped before they could be loaded on board, and during the voyage, a bull broke down its confining restraint and jumped overboard to its watery grave. At the end of the eight-week ordeal from London to Auckland via Tenerife, Cape Town and Hobart, the little group of Tahrs, comprising three nannies and two bulls were released into the Mount Cook- Aoraki region.

The Tahr, often called "The King of the Mountains", inhabits the highest mountain peaks and most rugged terrain of New Zealand's Southern Alps. They are prized not only for their horns, but also for their thick leonine pelt. A bull can weigh as much as 135 kg. It has a dark body and copious volume of straw-coloured hair that thickens and lengthens from late April for the antipodal winter.

Endowed with powerful shoulders and a broad torso for climbing both rough and smooth surfaces, typical of bluff systems, Tahrs utilize difficult terrain to their advantage, with the sturdiest and strongest bulls dwelling on the steepest and most rugged areas. The cloven-hoofed animal is remarkably agile and one of the most difficult trophies to obtain - a Tahr hunt seriously tests the skills of even the most seasoned world class hunter. New Zealand Government regulations regarded the Himalayan Tahr as a protected species until 1937.Since then, they have been periodically controlled by lethal means, in order to reduce their numbers in a controlled manner. Between July 2019 and February 2020, a staggering 12,000 and between July and November 2020, a further 7,000 of these ungulates were culled. New Zealand, where Himalayan Tahrs are considered to be an invasive species, has the only substantial wild herd of Himalayan Tahrs outside their native India, Western Bhutan, Southern Tibet and Nepal.

Internationally the Tahr is listed on the International Union for the Conservation of Nature (IUCN) "Red List" of endangered species, as "Near Threatened". (13)(14)(15)(16)

The only herds of **white-tail deer** in the southern hemisphere , are found in the South Island of New Zealand.

The maiden introduction of the white – and black-tail deer and the mule deer in Takaka valley, Nelson, New Zealand, was in 1901. However, none of the three species could be successfully stabilized.

In 1904, in St Louis, Missouri (90.19 degrees west) – in the other end of the globe, 266 meridians away from Auckland (174.76 degrees east), at the World's Fair, conducted to remember the centenary of the Louisiana Purchase, a herd of white tails, rescued from heavy snowfall in New Hampshire, were exhibited.

With President Theodore Roosevelt desiring to gift the ruminants to New Zealand, the twenty-two strong group was loaded on board a ship, in early 1905, to make the 12,000-mile trans – Pacific voyage from St Louis, down the Mississippi River, all the way to Auckland.

Remarkably, there were only four casualties - 14 does and 4 bucks, survived the trans-continental journey to touch down alive on New Zealand soil. Nine **whitetails, also known as Virginia deer**, were settled in Rees Valley, Lake Wakatipu in the lower part of the South Island, while the remaining 50% were accommodated in Pegasus Sound, Stewart Island.

The descendants of these whitetail deer in New Zealand went on to expand into two well established herds. It has been noticed that, due to the lack of genetic diversity, the Stewart Island whitetails are smaller in body, build, antler and trophy potential than those on the mainland. As the caprioline live in two very isolated locations, they are considered to be one of New Zealand's rarer deer species.(17)(18)(19)

In his letter dated 20 January, 1904, the Superintendent of Yellowstone National Park, John Pitcher assured President Theodore Roosevelt that the Park had a thousand strong **elk** herd .Therefore further to the presidential request to supply a number of animals, to augment those from the National Zoological Park, to complete the one score, being gifted to the New Zealand government, the Superintendent volunteered to do the needful.

While it was Yellowstone National Park, which provided ten animals, the other half comprising the herd came not from the Zoological Park, but from Mr. H E Richardson, of Brookfield, Massachusetts, owner of an Indian game reserve. The deer were believed to have been captured by Native Americans in northern Minnesota.

Elk are also referred to as Wapiti, which is from the native American word Waapiti ("white rump")used by the Shawnee Tribe.

In 1905, eighteen survivors of the original twenty were released in George Sound, Fiordland in the South Island. The small herd of 18 elk interbred with red deer in the wilds of Fiordland . Their descendants are known as Wapiti in New Zealand. Elk or Wapiti are the largest of all the round-horned deer in the world. The species are 1.2-1.5m at the shoulder, with females weighing 200-270kg and males 300-450kg. Wapiti stags have antlers running 5 x 5 (10 points).

With Rocky Mountain – Red Deer hybrids commonly found nowadays, very few pure elk remain in the New Zealand wilds – in very remote areas in the rugged south west portion of the South Island. The Fiordland area was designated as a national park in 1952, subsequent to which all introduced species including elk and elk–red deer hybrids were downgraded as pestiferous animals. At present time, most of the herd comprises only of cross bred animals. IUCN has declared that red deer and elk populations in New Zealand are an invasive species.(20)(21)(22)(23).

Rusa deer are the least widely distributed of all of the recognised deer species in New Zealand. Native to Java, Bali and Timor, they were mistakenly introduced into New Zealand in 1907 under the impression they were sambar deer. The first individuals were brought from New Caledonia, a French territory in the South Pacific, using stock from animals which probably originated in the Dutch East Indies. Like other deer species, the Rusa cause substantial agricultural damage. They have destroyed crops, cultivated plants and native flora in New Caledonia, and have resulted in the loss of a wide variety of crops and pastures in New Zealand by overgrazing and foraging. They have also competed with grazing livestock, and on occasion infected them with parasites.

The Rusa Deer is considered an environmental pest, causing damage to forests, grasslands and swamplands, through grazing of native flora and soil compaction. This damage results in changes to vegetation type and has a negative impact on native species such as ground-nesting birds, amphibians and reptiles. Some conservation reserves have been damaged by introduced populations of Rusa Deer through overgrazing, browsing, trampling, ring-barking, antler rubbing and dispersal of weed seeds, trails through the land or when exposed soils

became subject to erosion, with subsequent degradation of water quality in creek and river systems.(24)(25)(26)(27)

Other than the Himalayan Tahr, the second of the two Alpine ungulate species in New Zealand, is **chamois** – a goat-antelope. They were released into the Southern Alps in 1907 after being received as a return gift from Emperor Franz Josef of Austria, in exchange for lizards, living ferns and rare birds, native to New Zealand, sent to the Schonbrunn Zoo in Vienna.

Two chamois bucks and six does landed at Wellington Port on 23, January 1907, to be duly transported by ship, rail and horse to Mount Cook/Aoraki, where they were set free. Since the 1960's Chamois have been particularly well established in the South Island. New Zealand has the only free-ranging herds of **chamois, known locally as "chamy", in the southern hemisphere**.

At present time Alpine chamois are present in all five Department of Conservation conservancies in the South Island. Although the animals are predominantly found in alpine and subalpine areas, their present range also extends to lower elevations. They are believed to be continuing to disperse into the remaining available habitat, albeit at a considerably slower rate.

Although both chamois and Himalayan Tahr are currently restricted to the South Island, there are recent, but as yet unsubstantiated, reports of liberations of these species in the North Island.(28)(29)(30)

As early as in 1900, the largest and heaviest member of the deer family reached New Zealand, where they were released in the Hokitika Valley area. No records are available on how many **Canadian moose** were shipped and numbers that survived the gruelling voyage. No population was established. The last moose cow shot in 1908 for rampantly grazing in local gardens and agricultural fields.

A decade later, in 1910, a second and better-known endeavour was made, to release moose into New Zealand. New Zealand's Prime Minister, Sir Joseph Ward, who harboured a grand vision of making the outwardly desolate "Land of the Long white Cloud" into an omphalos, which unveiled the earth's most coveted living trophies, in the world's largest game reserve, and showcased the nation's varied and unique eco-regions, contacted the lieutenant -governor of Saskatchewan, Canada, George William Brown, with a request for Canadian moose to be sent to New Zealand.

Hudson's Bay Commission, vested with the task, caught ten calves from Beaver Hills, Saskatchewan. The juveniles were bottle–nursed with cow's milk, during captivity, before being freighted by train to Vancouver for their onward journey by ship to Wellington, where they were quarantined upon arrival. After completion of health formalities, the animals reached their final destination, Dusky Sound, in the remote south western corner of the country. They were then released at Supper Cove, in what is now the Fiordland National Park.

The momentous event marked the only time that moose have ever been released into the wild outside of their native range in North America. The ten moose were set free in pitch darkness at Supper Cove. The crew apparently had a hard time getting some of the calves to leave their crates, and one broke its leg in the process, but managed to survive.

Till date only three moose have been officially shot in New Zealand. They were a common sight in the area, until 1952. There have been no official sightings or confirmation of the megaherbivores on NZ soil since then.(31)(32)(33).

Feral goats, which are descended from the first pair of the caprine, released by Captain James Cook in 1773, on Arapawa Island's East Bay, are an immutable problem in New Zealand. During a subsequent visit Captain Cook, gifted a further brace to a local Maori Chief. Multiplying prodigiously, the ruminants soon overran the area and established themselves in newer domains. Meeting and mating with other farm escapees and abandonees further bolstered their numbers.

Sometime in the early 19th Century, whalers and sealers, plying their trade off New Zealand's 15000 km long coastline, introduced more goats as a ready, free-range inventory of meat protein. Soon after, the caprine, many of which had turned wild by then, began to be utilised, by farmers, for weed control in agricultural fields and for the thriving mohair industry.

Feral goats, numbering approximately 300,000 island wide, presently occupy 14% of New Zealand's land area (39,000 sq km), although this range of dominance has registered a decline as a result of ongoing culling operations. Feral goats are currently being controlled in over two-thirds of their range in the South Island and half their range in the North Island.

Reckless feeders, capable of destroying all vegetation in their reach, by overgrazing, the animals today represent grave danger to local flora.(34)(35)(36)

Feral sheep - New Zealand's thirteenth and final introduced invasive species comprise, today, of a number of breeds, some of which are Mohaka, Woodstock, Herbert, Digger's Hill, Stewart Island, Clarence Bridge, Arapawa island, Cambell Island and Pitt Island sheep - which live in New Zealand, since the early days of their introduction in the 1830s, with the majority of them believed to have escaped from domestic flocks.

In 1814, Samuel Marsden is credited with having brought the first sheep from Sydney to the Bay of Islands, New Zealand. Two decades later, in 1834 John Bell set up residence in Mana Island with 102 merinos from New South Wales. By the l880s "wild" sheep had become common in Hawke's Bay, in the mountainous districts of the South Island elsewhere in the country.

As a rule, sheep are not suited for going feral, particularly in the New Zealand bush, they cannot shed their wool naturally. The pelage ends up weighing them down, restricting their vision and snagging along vegetation, thorns and brambles.

There are 11 individual populations of feral sheep recognised in New Zealand, (8 on mainland and 3 on islands). Most inhabit private property. Today, truly feral sheep in New Zealand, are of merino origin or contain a high proportion of merino blood. Nothing is known of the flocks in remote areas, which were culled to extirpation. (37)(38)(39)(40)

The butter-soft New Zealand deer nappa, a by-product of the New Zealand's venison industry – possessing the strength of cowhide and the softness of lambskin and offering a high-quality feel - enjoyed a niche market in the first decade of this century. From peak export performance of NZD 24.5 million in 2012/13, it fell to a mere $6.5 million in 2019-20, with figures projected to plummet further in the coming years.

Deer leather is truly a haptic material - it is a tri-dimension of visual luxuriance, unmatched tactility and easy manipulability - comfortably worked into various sizes and shapes. Deer leather straps and off cuts are not material that designers like discarding. These are given scintillating afterlife by being upcycled into various creations. Some deerskin accessory brands have bought back schemes, thus ensuing that pre-owned bags enjoy multiple owners and thereby remain longer in circulation. Additionally, the buyback scheme means that a bag does not just hang at the back of a cupboard forever.

Deer leather is also strong and tactile enough to be refurbished which facilitates painting the leather, repairing stitching or replacing hardware, to be re-used or re-sold. Deer is a lightweight and drapey leather, making it perfect for utilitarian bags, designed to carry heavy laptops of office-going men and versatile and roomy enough to be shoulder -slung by the hands -free modern women, for carrying their professional and personal knickknacks.

As with all other leathers, deerskins, in the past decade, have been waging a battle with synthetic materials that are increasingly being used in everything from footwear to car seats. Serial evidence suggests that synthetics have significantly impacted world-wide demand for leather.

Though the hide, skin and leather industries are fighting back, skins and, more particularly, pelts have lost much of their monetary worth. Hair-and Wool-on pelts today have minimal value, while shorn pelts are now negative or are going straight to landfill, because there is no market for them. All have been affected by changes in fashion and consumer preference for non-animal products. Wool which used to have a comparable value to the meat return has unfortunately declined to the point where it is now shorn more for animal health than profit reasons.

When the situation began to improve marginally the onset of the pandemic heavily impacted demand as many tanneries, the world over closed down. The Covid-19 pandemic also caused a significant decrease in orders for deer leather from the automotive and aviation industries. The US-China trade war too, added to the chaos, with a large number of confirmed orders being cancelled by Chinese buyers. (41)(42)(43)(44).

For the NZ leather industry, continuing export statistics for venison reveals a marginal decline but antler velvet has registered a 75% growth while exports of deerskin have shown a 50% erosion.(45)

According to the Statistics New Zealand & Deer Industry, Wellington

	YE Sep 2015	YE Sep 2020
Venison export value (NZD, FOB)	$174 mil	$153 mil
Velvet export value (NZD, FOB)	$39 mil	$67 mil
Co-products export value (NZD, FOB)	$28 mil	$17 mil
Hides and Leather export value (NZD, FOB)	$14 mil	$6.5 mil

The triumvirate of the New Zealand tanning sector : Lowe Corporation, Tasman Tanning and Glendenburg Holdings have all faced punishing consolidation pressure due to the southward journey in price and demand of all types of skin, among them deerskin.

With progressively settled demand for co-products – hides, skins and pelts, tallow, meat and bone meal, tripe, tendons, blood and intestines for sausage casings and more recently medical applications, NZ tanning giants are diversifying by investing in a capital intensive, but not necessarily core part of the industry, such as rendering, making tallow and crackling, di-calcium phosphate, meat- and bone-meal for animal feeds.

Added to this, a number of job cuts in the NZ leather industry, since 2019 – Timaru Leathers (32), Tasman Tanning (17), G L Bowron & Co Ltd (17), implies that the demand for deer, sheep and lamb skin seem unlikely to improve any time soon.

In this scenario, there looks to be no viable pathway or appropriate outlet to successfully harness leather from New Zealand invasive species.(46) (47)(48)

At the moment the only outlet seems to be the hunting industry, which is patronized by hunters from all over the world. YE Sep 2015 YE Sep 2020 Venison export value (NZD, FOB) $174 mil $153 mil Velvet export value (NZD, FOB) $39 mil $67 mil Co-products export value (NZD, FOB) $28 mil $17 mil Hides and Leather export value (NZD, FOB) $14 mil $6.5 mil The New Zealand economy is supported and bolstered to a significant extent by its small commercial hunting industry, contributing a hefty estimated US 50 million annually, mainly in foreign exchange.

Typical commercial hunting operator charges for clients are (including GST) :

- Red stag Package - 4 nights accommodation & red stag - US6500 - US16000
- Red Stag, Chamois & Tahr packages - 7 nights accommodation hunting both North and South Islands, red stag, tahr, chamois and ALL helicopter time - US20000 - US29500
- South Pacific 8 Package - 10 nights accommodation hunting both North and South Islands, red stag (SCI 375 - 400), tahr, chamois, sika (up to SCI 140), rusa, fallow, ram, goat and ALL Helicopter time
- SCI Award application fee included + Alpine Hunting Prohunter shirt included - US $35,000
- Trophy fees for additional species go between US 3000 (sika) to US 9000 for Tahr.

The benefits mount up exponentially - If one hunter in for the week shoots three animals, he forks out an average of US$25,000 for these. And if four hunters, in for the week, go after the same animals - it is a cool US 100,000, with the head and skin taken away as trophies for a decent price.(49)(50)

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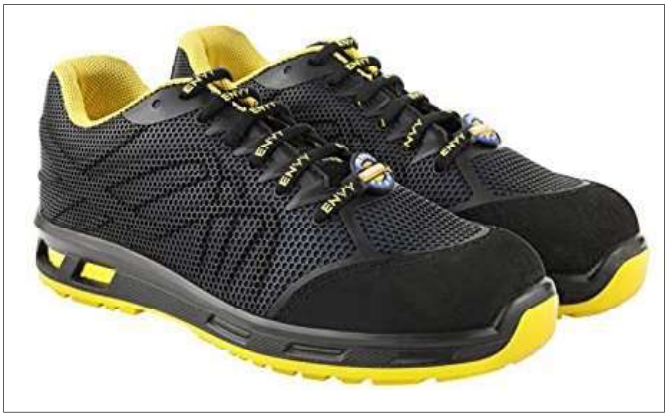
10 BEST SAFETY SHOES FOR MEN AND WOMEN: UNMATCHED PROTECTION WITH STYLE (2024)

Step into a fusion of safety and style with the premier safety shoes designed for both men and women. This meticulously curated list seamlessly blends cutting-edge safety features with contemporary design. Beyond safety features, modern safety shoes also prioritize comfort, incorporating ergonomic designs, breathable materials, and advanced cushioning technologies. Workers across diverse sectors, including construction, manufacturing, and healthcare, rely on safety shoes to ensure their well-being and productivity in challenging work environments.

Embrace a new era of workwear where functionality meets fashion, and confidently stride through any challenge. Engineered to provide uncompromising protection without sacrificing comfort, these safety shoes redefine the standards for professional footwear. Explore the epitome of reliability, innovation, and style through this list of the best safety shoes.

List of the best safety shoes for men and women :

1. Liberty Warrior Envy Cygnus Safety Shoes for Men



Liberty Warrior Envy Cygnus Safety Shoes for Men redefine safety footwear with cutting-edge features. The outer layer combines KPU and genuine Helcore leather for durability. The breathable Drytex lining ensures a comfortable and conditioned environment. The insocks are antibacterial and antistatic, with a fiberglass toe offering thermal insulation. The double-density PU sole is antiskid, abrasion-resistant, and oil/acid-resistant. With Popcorn Technology, these shoes absorb and return energy, providing an anti-fatigue effect. Balancing the foot in the right position, they dissipate pressure on joints, ensuring comfort at every step. The innovative design and advanced materials make them a revolutionary choice for safety footwear.

Material	:	Leather
Size Range	:	6 to 11 UK
Closure Type	:	Lace-up
Sole	:	Double Density PU Sole with Yellow Popcorn Insert
Special Features	:	Breathable Lining, Antibacterial, Antistatic, Anti-skid, Abrasion/Oil/ Acid Resistant

2. KARAM Safety Shoe

KARAM Safety Shoes redefine workplace safety with innovative design and top-notch features. These 100% metal-free shoes boast a flyknit fabric upper in striking black and orange, offering breathability and style. Ideal for various industries, including telecommunication, pharmaceutical, automotive, and more, they come with an antistatic sole and hold certifications. The ultra-lightweight construction, comfortable fit, and strong, durable stitching with bonded thread make KARAM stand out among the best safety shoes. Known for excellent grip, comfort, and slip resistance, these shoes deliver protection and durability for any work environment.

Material	:	Fly Knit
Size Range	:	6 to 11 UK
Closure Type	:	Lace-up
Sole	:	Polyurethane
Special Features	:	Water Resistant, 100% Metal Free, Breathable Lining, Antistatic Sole, Shock Absorbent, Slip Resistant, Anti-fa.

3. Allen Cooper 1156 Men's Safety Shoe

Allen Cooper 1156 Men's Safety Shoe, a best-selling safety shoe, is engineered for style, comfort, and optimal protection. Its moisture-wicking breathable fabric lining ensures a dry and comfortable feel during long working hours. The steel toe is designed to withstand impacts of over 200 J, meeting international safety standards. The double-density directly injected PU sole, oil and acid resistance, and anti-static properties make these shoes reliable in various work environments. Crafted with a grey suede leather upper featuring anti-scratch properties, this Allen Cooper safety shoe is both durable and stylish. The special anti-fatigue in-sock enhances comfort, while the ISI marking, CE certification, and adherence to BIS standards make them a trustworthy choice.

Material	:	Suede Leather
Size Range	:	6 to 11 UK
Closure Type	:	Lace-up
Sole	:	Double density directly injected PU sole
Special Features	:	Slip Resistant, Shock Resistant, All-Weather Grip, Water Resistant, Breathable, Steel Toe, Oil and Acid Resistant, ISI Marked

4. Allen Cooper AC-1197 Women Safety Shoe

llen Cooper AC-1197 Women's Safety Shoe exemplifies the commitment to quality, safety, and style. ISI marked, these safety shoes for women are crafted for optimum protection. The buff C.G. fine leather upper ensures breathability and durability, making them suitable for long hours of work in challenging conditions.

The imported EN marked powder-coated rust-resistant steel toe cap provides impact resistance of 200 ± 4 joules. The DIP PU double density dual-colour sole, and various safety features like oil, mild acid, slip, and heat resistance up to 120 degrees Celsius, along with antistatic properties, make these Allen Cooper safety shoes a reliable choice for women in the workforce.

Material	:	Leather
Size	:	6 UK
Closure Type	:	Slip on
Sole	:	DIP PU double density dual colour sole
Special Features	:	ISI Marked, Rust Resistant Steel Toe Cap, Oil/Slip/Heat Resistant, Velcro Fastener, Breathable Lining, Antistatic

5. KARAM ISI Marked Leather Safety Shoe

KARAM ISI Marked Leather Safety Shoe is crafted with a full-grain leather upper, featuring black cambrelle lining for durability and comfort. The vamp lining, made of highly abrasion-resistant non-woven fabric, enhances their robustness. The ISI marked safety shoes are stitched with bonded thread, ensuring strength and longevity. Known for their outstanding grip, comfort, and slip resistance, these top-rated safety shoes provide reliable protection. The rugged styling and quality leathers make these shoes an easy everyday choice, both on and off the job.

Material	:	Leather
Size Range	:	4 to 13 UK (Narrow)
Closure Type	:	Lace-up
Sole	:	Anti-Static Sole
Special Features	:	6 Month Warranty, Slip Resistant, Steel Toe, Oil and Acid Resistant, Shock Absorbant, Anti-fatigue

6. NEOSAFE Falconer A2012_10 Sports Line Safety Shoes

NEOSAFE Falconer A2012_10 Sports Line Safety Shoes are a perfect blend of style, comfort, and safety. These ISI marked safety shoes adhere to S1P safety standards, featuring a puncture-proof steel mid-plate for anti-penetration and a steel toe for impact resistance. The safety grade knitted upper in a sporty blue look ensures superior quality and high durability. With modern sporty design and additional cushioning, these safety shoes prioritize comfort with PU memory foam insoles for an anti-fatigue effect. Resistant to impact, slip, abrasion, flexing, oil, acid, and heat up to 120□C, these breathable men's safety shoes offer a soft, comfortable, and lighter option, relieving pressure on their feet.

Material	:	Flyknit fabric
Size Range	:	7 to 11 UK (Wide)
Closure Type	:	Lace-up
Sole	:	PU double density injection molded sole
Special Features	:	Steel Toe, Puncture Proof Mid Plate, 6 Month Warranty, ISI Marked, Anti-fatigue, Anti-Slip, Abrasion, Acid Resistant

7. Liberty Fighter Genuine Leather Safety Shoes for Women

Liberty Fighter Genuine Leather Safety Shoes for Women are designed to provide optimal safety, comfort, and durability. Crafted with genuine Barton leather, these shoes offer a stylish yet protective solution. The Cambrella breathable lining ensures odour-free, antibacterial softness. The molded antistatic, antibacterial, and breathable insoles prioritize comfort during long hours of wear. With a steel toe cap meeting European standards for energy absorption up to 200 Joules, these shoes guarantee ample toe room without discomfort or fatigue. The single-density PU sole is antiskid, abrasion-resistant, oil/acid-resistant, and antistatic, ensuring safety in various work environments. Overall, it is one of the best safety shoes for women that you can find online.

Material	:	Leather, Polyurethane, Alloy Steel
Size Range	:	3 to 8 UK
Closure Type	:	Velcro
Sole	:	Polyurethane
Special Features	:	Steel Toe, Odour Free, Antibacterial, Water Resistant, Antiskid, Abrasion Resistant, Oil/Acid Resistant

8. Tiger Men's Leather Leopard High Ankle Safety Shoes

Tiger Men's Leather Leopard High Ankle Safety Shoes offer a blend of fine materials, impeccable design, and practical features. These high-cut boots provide shock resistance, a crushproof toe cap, and resistance to water and heat—ideal for the oil industry. The shoes boast an oil-resistant, puncture-proof sole with anti-static and slip-resistant properties, ensuring safety in diverse work environments. The upper, made of Barton grain leather, and black synthetic cambrelle lining enhance durability. With a sleek finish and two-colour options, white and black, these shoes are the epitome of best-selling safety shoes for men.

Material	:	Leather
Size Range	:	6 to 10
Closure Type	:	Lace-up
Sole	:	Injected-single density PU
Special Features	:	Water and Heat Resistant, Slip Resistant, Puncher-proof, Anti-static, Shock Resistant

9. Tiger Men's Low Ankle Lorex Steel Toe Safety Shoes

Tiger Men's Low Ankle Lorex Steel Toe Safety Shoes exemplify excellence with their fine materials, and practical features. Crafted with Barton print leather, these low ankle boots offer shock resistance, a crushproof toe cap, and resilience against water and heat, making them ideal for various work environments, including the oil industry. These shoes come with a removable polyamide on EVA footbed and an injected single-density PU outsole, ensuring comfort and safety. Overall, these top-rated safety shoes are a perfect blend of functionality and style.

Material	:	Leather
Size Range	:	6 to 12
Closure Type	:	Lace-up
Sole	:	Injected-single density PU
Special Features	:	Water and Heat Resistant, Slip Resistant, Puncher-proof, Anti-static, Shock Resistant

10. KAVACHA Pure Leather Steel Toe S95 Ladies Safety Shoe

KAVACHA Pure Leather Steel Toe S95 Ladies Safety Shoe is a blend of safety and style, designed for the modern professional women. With a steel toe cap, it ensures all-around protection without compromising on comfort. The light-weight and comfortable design make it suitable for executives and higher management. The PVC sole is anti-slip, durable, and ensures a firm grip. The pure leather upper not only provides excellent foot and shank support but also adds a touch of sophistication. Padded in socks enhance comfort, and the high breathability of the shoes ensures freshness even during extended wear.

Material	:	Leather
Size	:	3 UK
Closure Type	:	Pull-on

Sole	:	Leather, Polyvinyl Chloride
Special Features	:	Steel Toe, Anti-slip, Padded Insocks, Affordable

(economictimes.indiatimes.com – 25/01/2024)

BUDGET 2024 | PLI SCHEME : TOKEN ALLOCATIONS FOR TOYS AND LEATHER, FOOTWEAR

The interim Budget has made a token allocation for Production-Linked Incentive (PLI) schemes for two new sectors — toys and leather & footwear — for FY25, subject to approval by the Union Cabinet.

Overall, the interim Budget FY25 has pegged disbursements from PLI at Rs. 6,200 crore next fiscal, about 33 per cent higher than an estimated Rs. 4,645 crore this fiscal, and this could be increased in supplementaries if needed.

"PLI outlay will grow by leaps and bounds going forward. Every industry has a gestation period. Those PLI schemes that were started 3-4 years ago, like electronics, where the gestation period is small, have come into operation. But sectors like, say textiles, auto components, and steel have longer gestation periods. So, as these will come into operation, PLI outlay will grow by leaps and bounds. These are estimates. If all this gets used up, we will provide more in the supplementaries," Commerce & Industry Minister Piyush Goyal told *businessline.*

The proposed extension of the scheme to the leather & footwear sector has been envisaged with an outlay of Rs. 2,600 crore while for the toys sector, the token outlay is fixed at Rs. 3,489 crore.

The schemes for toys and leather and footwear have not yet been given a nod to Cabinet. When asked when the schemes might be announced, Goyal said: "My saying anything would be prejudging what the Cabinet decides. So, these are decisions taken by the Prime Minister-led Cabinet, and whenever whatever they decide, we will know."

Scheme Period

According to Budget documents, the scheme period for the proposed PLI scheme for leather & footwear is FY24 to FY32. "The yearly outgo of incentives depends upon variables. The benefits availed by a manufacturer under the existing IFLDP scheme shall be adjusted while calculating the incentives for the same unit under this PLI scheme. The scheme is not yet approved by the Cabinet. Hence, the token provision has only been made for FY25, the Budget document stated.

The PLI scheme for toys is recommended with an outlay of ¹ 3,489 crore for a scheme period of FY25 to FY32. "An entity availing benefits under any other PLI scheme of the Government of India shall not be eligible for the same product. The scheme is not yet approved by the Cabinet. Hence, the token provision has only been made for FY25," it added.

The government had originally expected PLI disbursements of Rs. 11,000 crore this fiscal.

(thehindubusinessline.com – 01/02/2024)

THE WORLD IS LOOKING AT INDIA-ONLY POLICY FOR LEATHER & FOOTWEAR MFG'

At a time when global players are pushing for the 'China plus one policy', it is 'India only policy' for the leather and footwear industry. In an interview to TOI, R Selvam, executive director,

Council for Leather Exports (CLE) says, Taiwanese companies, which manufacture 80% of world's non-leather footwear, are making inroads in India.

Excerpts: What is the size of the leather and footwear industry in India? The current size of our leather and footwear industry is at $18 billion, of which exports alone account for $5-$6 billion. There are seven major clusters located in Tamil Nadu, Uttar Pradesh, Punjab, Delhi, Maharashtra, Haryana and West Bengal. Of late, Andhra Pradesh, Kerala and Odisha are also catching up. Leather and footwear is a labour intensive industry employing 44 lakh people, with 40% women.

How this industry is projected to grow?

India's leather, leather products and footwear industry are set for a robust growth hitting $47 billion by 2030. The vision document for the industry that we had released last month states that export turnover will more than double from the current levels to the tune of $14 billion. There are other international reports, which suggests that India's leather and footwear industry will be $90 billion. Over the next 6-7 years, this sector will offer an additional 20 lakh jobs.

How do you see the 'China plus one policy' in the leather and footwear sector?

About 45%-50% of our exports in this sector are shipped to Europe and 15% to the US. Brands drive the industry, who take the call on where their products should be made. Several brands headquartered in Europe, US and Australia with manufacturing units in China want to move to India. Manufacturers are shifting their base and that's how the 'India only policy' in leather and footwear is taking shape. Some manufacturers are shifting their plants from Indonesia to India. The next three to four decades will be India's story in this industry, where India will be the global manufacturer.

Has the momentum on 'India only policy' started?

About 80% of non-leather footwear in the world is manufactured by Taiwanese companies across the globe including China, Indonesia and Vietnam. Thanks to our improvement in ease of doing business, infrastructure enhancement and availability of skilled manpower, several of these companies are making inroads into India, particularly Tamil Nadu. Major international brands such as Nike, Columbia and Crocs brands are produced, while New Balance and Cole Haan are also likely to be made here. Tamil Nadu will emerge as Dongguan, the major footwear cluster of the world based in China. Moreover, Adidas and Puma are also manufactured in India.

What are the allied industries that will be developed along with the footwear industries?

We are going to excel not only in footwear manufacturing, but also in allied industries such as component manufacturing, supply chain management segment, research and design development.

(Times of India – 22/01/2024)

SIDBI ET MSME CONCLAVE: FOURTH SESSION IN BELAGAVI TO ENHANCE THE INDUSTRIAL MIGHT OF THE REGION

After three successful sessions, the SIDBI ET MSME Conclave is now set to enter Karnataka, with its fourth session scheduled to be held in Belagavi on February 6.

The conclave is a series of events held across the country that aims to bring together micro, small & medium enterprises (MSMEs), policymakers and ecosystem enablers. The first three sessions were held in Indore, Bhubaneswar and Ludhiana. These events saw a stellar turnout, and became a productive platform for the stakeholders to get to know each other and find ways to work together.

This programme aims to catalyse the next wave of growth opportunities, foster knowledge exchange, enable networking and help to tackle challenges, for sustainable growth in Indian MSMEs.

The upcoming session in Belagavi will see engaging panel discussions and fireside chats with industry stakeholders, MSMEs and entrepreneurs. The topics of discussion will include innovation, growth and entrepreneurial drive of small businesses.

Belagavi has been known to be an ideal place for investment opportunities. It is growing at a phenomenal pace in the industrial region of the north-western part of Karnataka. The city is home to many large industries including clay, leather and soap. It also hosts a trade centre for agricultural commodities such as sugarcane, tobacco, cotton, tobacco and milk products.

It is also among the 20 cities in India selected for the Smart Cities Mission. Belagavi is the fourth-largest city in Karnataka and as a district, has 10 talukas. The district is also among the top five contributing districts of the state, according to the District Domestic Product 2021-22, along with Dakshina Kannada, Tumukuru, Bengaluru Urban and Mysore.
The government of Karnataka has set up the K-Tech Innovation Hub in the city owing to the presence of various innovative small and medium enterprises.

According to the Karnataka Economic Survey 2023, among the state's industrial ecosystem, the Belagavi district has the second-highest number of establishment units, at 2,99,997, after Bengaluru Urban, at 78,24,646. It is also among the six districts to have a GDP higher than the state average; the others are Bengaluru Urban, Dakshina Kannada, Ballari, Tumakuru and Udupi.

The SME sector in the country is known for its entrepreneurial achievements and ambition, and the MSME conclaves aim to provide a platform to strengthen the small businesses in the country.

This event is particularly tailored for the cities in Bharat and the vibrant MSMEs that exist there. The SIDBI events seek to shape the discourse on building financially robust and competitive MSMEs that can help the country realise the Atmanirbhar Bharat vision.

(economictimes.indiatimes.com – 29/01/2024)

BATA GROUP PARTNERS WITH LEATHER WORKING GROUP TO DRIVE SUSTAINABLE LEATHER SUPPLY CHAIN PRACTICES

As part of Bata Group's dedication to establishing a responsible leather supply chain, reflecting its commitment to sustainability, conscientiousness, and responsibility, it has recently announced that is has joined the Leather Working Group (LWG). A global multistakeholder organization, LWG is committed to driving excellence in the leather industry, minimizing its environmental impact, and challenging industry perceptions through various tools and ESG certification.

Through its collaboration with LWG, Bata Group gains access to tools that facilitate the adoption of cleaner solutions, reduction of chemicals, optimization of energy usage, and mitigation of water pollution.

This partnership enables active monitoring and enhancement of Bata Group's environmental footprint, recognizing the significant impact of the fashion industry and its supply chains on issues such as soil degradation, ecosystem conversion, and biodiversity loss, particularly through materials like leather sourced from agriculture. While acknowledging the potential of regenerative agricultural practices, Bata Group remains focused on immediate actions to mitigate environmental impacts within its supply chain.

The membership in LWG underscores Bata Group's ongoing commitment to transparency, accountability, and continuous improvement in its sourcing practices. Together with LWG, Bata Group aims to innovate, collaborate, and lead the way toward a brighter and more sustainable future.

(leathermag.com - 01/03/2024)

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CLEAN TECHNOLOGY CHALLENGES

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Introduction

Great progress has been made in the development and implementation of clean technology in tanneries but we have to do more. The economic value of resources must be maximised and waste must be further reduced. Continuous improvement is now demanded and this is a challenge. A number of issues will become of increasing concern to tanners:

Water use

There will be increasing pressure to reduce water consumption in all industries. Some countries are already suffering from aquifer depletion and irrigation water shortages have already reduced world grain production. Reuse of wastewater for irrigation is being promoted but this may not be sustainable when Total Dissolved Salts (TDS) levels are high.

Salinity

Agriculture in arid and semi-arid parts of the world results in salinity of soils and water. Industry must not add to these problems and TDS discharge is therefore of major concern for some tanneries.

Energy

All industries should minimise energy use and reduce their contribution to the release of greenhouse gases. Some tanneries make use of solar energy and this should increase as the technologies improve. Photo voltaic scells are already being incorporated into buildings and a photovoltaic roofing material has been developed in Japan. A new development is a cell based on titanium dioxide which is twice as efficient as currently available cells'. Solar energy could be used for chilling hides and skins for short-term preservation.

Occupational Health and Safety (OHS)

In substituting one chemical for another, the real environmental benefits and health and safety effects must be considered. Replacing a regulated chemical with a new chemical is not necessarily clean production. For example, the use of glutaraldehyde in tanning and aziridine or some isocyanates in finishing can be hazardous for the tannery workers.

Air pollution

Volatile Organic Carbon (VOC) emissions are now controlled because, in the presence of nitrogen oxides and light VOC compounds produce ozone in the lower atmosphere and this causes summer smog.

Tannery emissions controlled for OHS reasons include ammonia, hydrogen sulfide, formaldehyde, glutaraldehyde and particulates, which are generated during combustion of some fuels.

Solid waste

There is a misconception that cleaner production eliminates industrial solid waste and as a consequence, communities are not providing suitable waste disposal facilities. Wastes must be minimised and utilised where possible but more research and development is needed to enable waste elimination.

Salinity Reduction

Salinity or TDS in effluent is the major environmental concern for the disposal of tannery effluent by irrigation. High salinity in irrigation water causes high osmotic pressure which results in reduced water availability and retarded plant growth of crops which are not salt tolerant. In addition, high concentrations of sodium ions in irrigation water can adversely affect soil structure by causing dispersion of clay. The presence of calcium and magnesium ions in tannery effluent ameliorates this effect by stabilising the soils. In addition, hair and lime from unhairing is beneficial for acidic soils.

Salts and sodium ions are commonly added to all wet-blue processes but effluent loads are being minimised in Australia, as shown in Table 1, using a range of CSIRO developments:

- processing green hides
- reducing floats and chemical consumption
- reusing lime liquors in conjunction with hair-saving processes
- carbon dioxide deliming
- direct recycling of chrome liquors
- the use of magnesium oxide for basification and
- eliminating washing after tanning.

Table 1 :
Salts in wet-blue production
% on hide weight

	Process	% Salt	% Sodium
Soak :	Salted Hides	14	5.6
Lime	1% HaHS (70%)	1	0.3
	1.5% Na_2S (60%)	1.5 [0.75]	0.55 [0.27]
	2.5% $Ca(OH)_2$	2.5 [2.25]	
Delime	1% CO_2	<1	
	1% $(NH_4)_2SO_4$	1	
	0.5% $Na_2S_2O_5$	0.5	0.1
Pickle	6%	NaCl	6 (2) 2.5 (0.8)
	1% HCOOH	1 (0.75)	
	1% H_2SO_4	1	
Tan	8% Chrome	8 (6) or 7	0.8 (0.5)
	Powder	(5)	
	0.75 MgO	0.7	

Fig. in brackets [ ] are achieved with lime liquor recycling
Fig in brackets ( ) are achieved with efficient chrome liquor recycling

Large numbers of Australian sheepskins are air died in open sheds using solar and wind energy. This overcomes salt effluent problems. However, increasing numbers of skins are now salted for processing with the wool on. A controlled system for drying fleshed sheepskins has been developed[2].

Direct chrome liquor recycling[3] reduces the use of both sodium chloride and chrome powder, which contains up to 30% sodium sulphate. Chrome precipitation from the total volume of spent chrome liquors results in far higher TDs levels and should not be used when salinity is a concern.

Appropriate technologies

In choosing the best technologies for a particular tannery, the overall environmental and cost benefits need to be assessed, including energy, water and chemical consumption and solid waste disposal. After such an assessment by Australian tanneries, direct chrome liquor recycling with precipitation of excess chromium containing liquors is usually preferred to high-exhaust systems. Recirculating drums are being purchased although they are more expensive than conventional drums. Appropriate technology should be adopted rather than "best available technology". A particular technology may be best for one situation but not for another. In considering clean technologies, present beliefs should be questioned and new ideas should be generated.

Towards zero waste

KKSK Leathers in Tamil Nadu, India, provides an excellent example of new ideas and appropriate choice of technology for particular conditions[4]. Good quality leathers are produced with a process which incorporates the following :

- Water use for wet-blue production is less than 5 L/kg hide and half of this is solar evaporated and half irrigated.
- Floats are minimised and there is only one lime wash, one delime wash and a 20% final rinse.
- Salted hides are soaked in 175% float of partially treated effluent which contains some sulphide. The effluent that is treated is 100% lime liquor, small volumes of delime liquor, 30% pickle liquor and 45% supernantat from the chrome recovery plant
- The soak liquor is settled, clarified, sand filtered and dried in solar evaporation pans. The recovered salt is used as a pesticide
- The lime wash liquor is used for 48 hour liming in 175% float
- Deliming is in no float and there is no bate
- The 100% delime wash is used for irrigation
- Pickling is in 30% fresh water
- Tanning is in 35% fresh water
- Chromium is recovered from the tanning, wash and rechroming liquors and is reused
- 50% fresh water is used for fleshing and cleaning and is irrigated
- The 150% float for irrigation is mixed with liquors from processing of the wet-blue to finished leathers. The mixed liquors have a TDS of 2,100 mg/L, which meets the regulations
- Sludge from the effluent treatment is dried and used as a fertilisr
- There is a 30% saving in chemical costs

These initiatives enable KKSK to be a leader and to operate with zero waste and very low water consumption. Solar evapora-

tion is not possible in many locations but commercially viable alternative systems must be found. Some Australian tanneries are recycling floats, using only one lime wash, reusing treated liquors and using recovered hair as a fertiliser. They can achieve water consumption of 5 L/kg wet-blue or less but only those tanneries that irrigate can achieve zero discharge.

Summary of Cleaner Processes

Currently available clean technologies are listed below with brief comments. Processes requiring further research are asterisked.

Preservation Alternative to salt* • Green processing • Drying • Dry pickling • Chilling • Chemicals	 • Australian sheepskins are air-dried • Australian woolskins • For up to 2 weeks in Australia • During transport in B weeks in Australia
Green fleshing	Best when fleshings rendered at abattoir
All Wet Processes : • Reduced chemical and water use* • Efficient washing and drainage	
Unhairing/Dewooling* • Conventional hair saving/fellmongering • Partial immunisation of hair : 1. Rapid air-saving in recycling Drums 2. Adaptations for old drums 3. Enzyms*	
Deliming • CO_2 Deliming • Elimination of hydrogen sulphide • emissions*	*Peroxide can damage drums*
Surfactants*	Alcohol ehtoxylates are replacing nonylphenol ethoxylates
Pickling • No pickle* • Recycle • Salt-free*	 Non-swelling acids add to BOD

Chrome utilization 1. Direct liquor recycle 2. Precipitation and reuse 3. High-exhaust systems 4. Total chrome liquor recycle	 Best if 1 & 2 combined 3. Requires low float, good control 4. High capital cost
Fungicide treatment*	More effective, environmentally friendly fungicides are needed
Alternative tannages* 1. Glutaraldehyde 2. Minerals eg Alutan 3. Veg 4. Organic	All have disadvantages compared to chromium
Precision Splitting*	Reduces chrome tanned waste
Retans, dyes and fatliquors* 1. High exhaust 2. Non-toxic dyes and pigments 3. Through feed processing 4. Reuse of liquors	Amphoteric polymers effective
Drying*	
Finishing* • Aqueous systems • Equipment to reduce wastage 1. Roller coaters 2. Spray economisers	Less toxic crosslinking agents needed
Degreasing* • Surfactants • Enzymes • CO_2 • Pickled pelts • Woolskins	 Aqueous systems increase BOD/COD

Enzymes*	
• Unhairing/opening up	
• Degreasing	
• Dung removal	
Utilisation of waste	
• Fleshings	• Best when green fleshing
• Hair	• Used as fertiliser and in compost
• Irrigation	
• Chrome wastes*	
• Leather wastes*	Incineration with recovery of energy and chromium may be feasible
Important quality controls	
Recirculating drums	
Automation	
Good housekeeping	No water or compressed air leaks
Accurate, comprehensive recording	Minimize spills and washing down
Right first time	No wasteful reworking
Mass balances	
Process flow sheets	

Options for cleaner chromium tanning[5]

Chrome tanning has been a major focus for cleaner production and various systems have been developed.

High exhaust systems

Require good control. Suitable for some tanneries. Effluent needs treatment.

Direct chrome liquor recycling

Simple. Suitable for some small & larger tanneries. Reduces TDS

Direct chrome liquor recycling with precipitation and re-sue of chrome in excess liquors

Best for Australia, when effluent is irrigated.

Thorstesen[6] recommends this option for small tanneries in developing countries.

Chrome precipitation and re-use

Increase TDS.

Chrome precipitation and re-use with use of supernatant in pickle

Little lowering of TDS.

Total chrome liquor reuse

Total chrome liquor recycling is a system developed by CSIRO[7] for reuse of all the chromium and salts in tanning liquors. The

liquors are concentrated before reuse. The capital cost of flash evaporation has been too high for commercial adoption; the challenge is to reduce the capital and operating costs. Solar evaporation may be possible in some climates. Each system has advantages and disadvantages and some of these are shown in Table 2. Mass balances are necessary to establish the real benefits of the options available.

Table 2 :
Advantages and disadvantages of options

	Cr use	Reduction in salt used	Cr in waste	Equipment cost*	Operating cost*
HE	++	+	1	variable	
DR	++	+++	+	2	1
DRP	Total	+++	0	3	2
PR	Total	0	0	4	3
PRS	Total	+	0	5	4
TCLR	Total	Total	0	6	Variable

* Increasing cost from 1 (lowest) to 6 (highest)

HE	High exhaust systems.
DR	Direct Chrome Liquor Recycling.
DRP	Direct Chrome Liquor Recycling with precipitation and re-use of chrome in excess liquors.
PR	Chrome precipitation and re-use
PRS	Chrome precipitation and re-use with use of supernatant in pickle.
TCLR	Total chrome liquor reuse.

Direct chrome liquor recycling[3,5]

The Importance of Process Flow Sheets and Material Balances

Fig. 1 and 2 give material balances for 10 tonnes of delimed hide being processed to sammed wet-blue. In Fig. 1, the hides and drum are washed with a total of 100% water and there is 150% excess chrome containing liquor. In Fig. 2, the hides are not washed before samming and the drum is washed with 5% water (500L) and only 50% float requires precipitation.

Pickling and tannage

- After drainage, the required salt is added to the delimed hides and drummed before the pickle liquor is added.
- Best practice requires less than 2% salt addition but it is vital that the SG is sufficient to control swelling to the same degree as in the normal tannery process.
- The recovered chrome liquor must be acidified before it is reused for the next pack of delimed hides. The pH < 1 and this prevents chrome staining. At this low pH, the chromium species present are of low molecular weight and rapidly penetrate the hide.
- Good practice will allow indefinite reuse of the chrome liquor.

Direct chrome recycling plus reuse of excess chrome liquors

If a tannery is already recovering chromium, it is very easy to combine this with direct recycling (see Fig. 3). The greatest savings in salt use are made if the spent chrome liquor from the drum is collected undiluted for recycle and diluted liquors are precipitated.

Direct recycling of chrome plus alutan.

Ramasami et al.[8] have developed a recycling chrome plus aluminium system.

Appropriate regulations

Appropriate regulations should vary between countries and between different regions within a country. For example, salinity is of concern in some inland areas but is not a problem for disposal to the ocean. Regulations will also vary for different types of sewage treatment plants with different loads and capacities. Mass loading regulations for pollutants rather than concentration limits encourage reduced water consumption. It is encouraging that a number of authorities around the world are reconsidering their regulations for chromium in the environment. The industry must provide authorities with scientific information to counteract misinformation and emotion.

Risk assessments of chromium in the environment

Risk assessment is increasingly being used in evaluating environmental issues, especially in the USA. For example, an expert panel investigated chromium-contaminated soils in a residential area and concluded that soil concentrations of 2,800 mg/kg Cr(III) and 180 mg/kg Cr or near the contaminated sites[9]. These findings and recent reports of Health-Based Soil Action Levels[10] and case studies involving human exposure to Cr(VI) in soil and ground water[11] put the relative toxicity of Cr(III) and Cr(VI) into perspective. Cr(VI) is more toxic than Cr(III) but low levels can be tolerated. These risk assessment studies should be used to evaluate the health and environmental effects of low levels of Cr(VI) in leathers and to put the present concern in Europe into perspective. The human studies showed that the gastrointestinal tract can reduce ingested Cr(VI) to Cr(III) at concentrations up to 10 mg Cr(VI)/L and soil concentrations of 1240 ppm Cr(VI) do not elicit allergic contact dermatitis in >99.9% of the general population[11].

Fig. 1 : Process flow sheet for a 100% wash

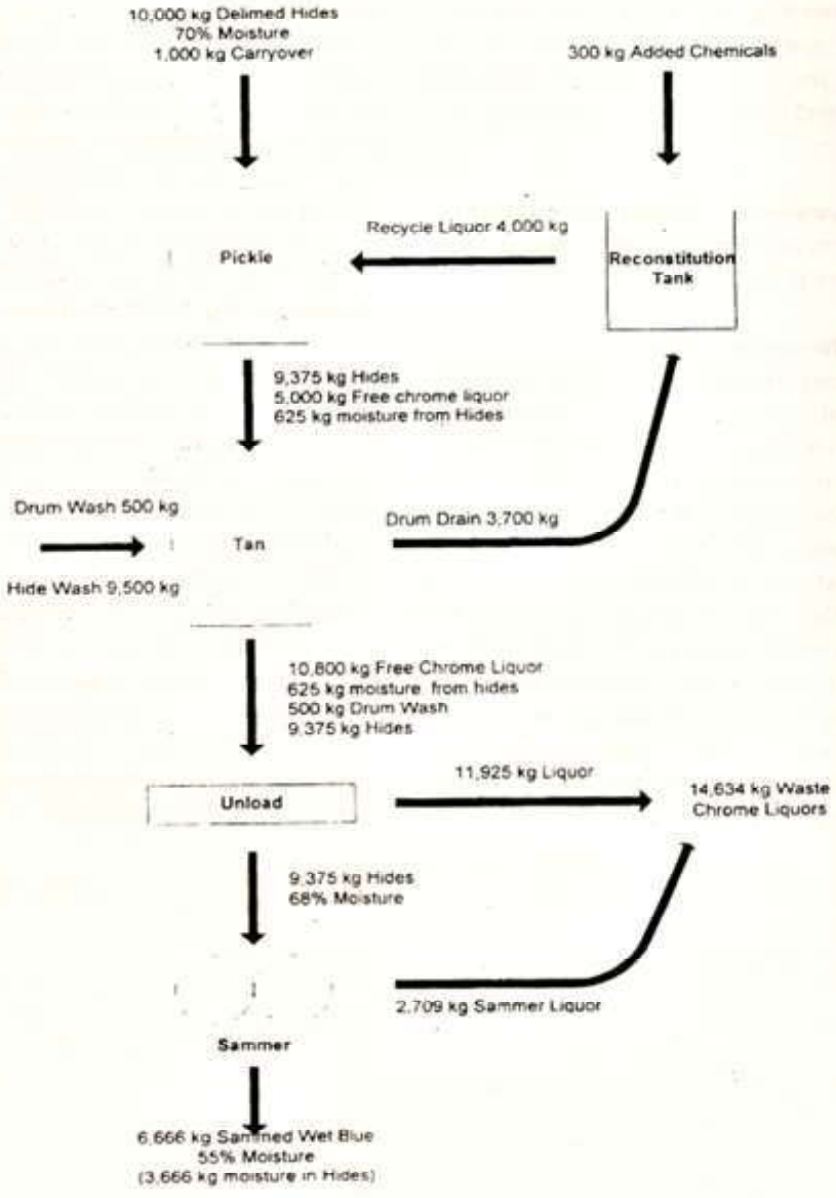


Fig. 2 : Process flow sheet for no washing

Fig. 2: Process flow sheet for no washing

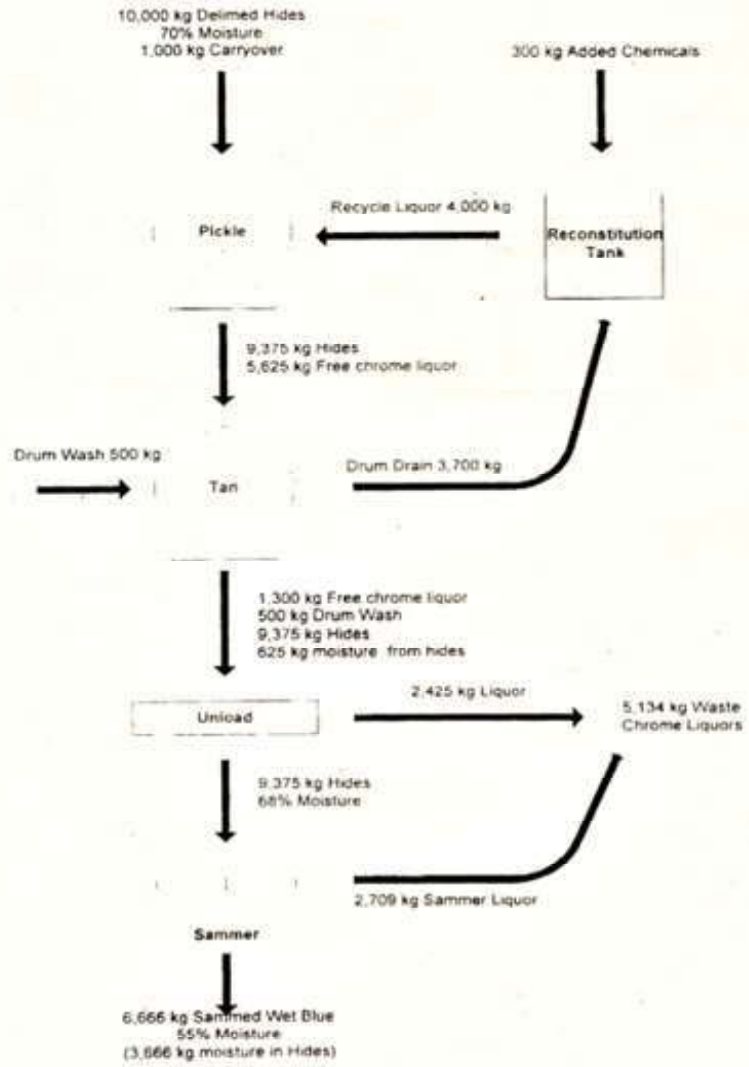
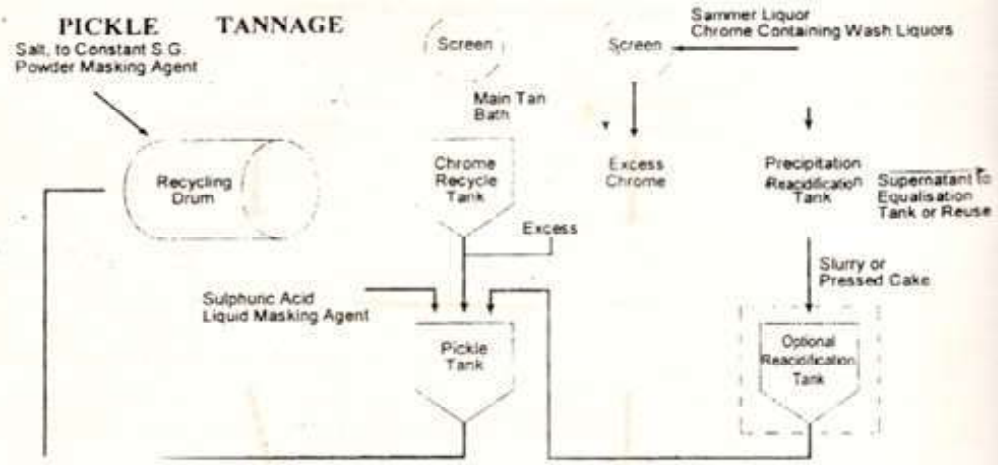


Fig. 3 : Direct chrome recycling and reuse of excess chrome liquors



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NO RELIEF IN MSME RULE YOU MUST HAVE TO MAKE PAYMENT WITHIN 45 DAYS

The government will impose a rule in FY25 mandating payments to micro, small, and medium enterprises (MSMEs) to be made within 45 days, failing which corporations will be required to pay tax on the amount due.

According to two senior finance ministry officials, any changes to the rule will be possible only in the Union Budget in July. They claimed that the government is not considering postponing the rule by a year, as traders have requested.

"According to the Finance Act 2023, companies need to make payments to the MSME sector within 45 days, which is scheduled to come into effect from April 1, 2024, else the companies cannot claim deductions on it," a senior official from the finance ministry said.

The Finance Act of 2023 added Section 43B (h) to the Income Tax Act to ensure that MSMEs receive timely payments and have uninterrupted cash flow. If a company fails to make payments within 45 days, the amount will be added to its profit and taxed accordingly.

Parliament has already accepted the amendment. The new rule suggests that an employer, including a firm, can only claim a deduction for a tax, duty, cess, or charge owed to the overnment when it is actually paid, regardless of when it is earned or incurred.

"The provision makes sure that businesses fulfil their tax obligations promptly, rather than deferring payments indefinitely for tax benefits," the second finance ministry official explained.

No Change Possible

Any changes to the rule may only be made in the next budget in July, according to the official, who added that no changes are allowed before then because they must be authorized by parliament.

"Even an ordinance route is not feasible as parliament will not be in session to approve it till July," the official went on to say.

The Confederation of All India Traders (CAIT) requested that the rule be postponed for a year due to a lack of clarity. CAIT Secretary General Praveen Khandelwal stated that traders across the country need to be more aware of this provision.

MSMEs confront rising issues as a result of delayed payments from both public and private institutions. Small enterprises frequently operate on tight margins, and payment delays damage their cash flow and limit their operating capabilities.

Delays in payments have a wide-ranging impact on the MSME ecosystem, from manufacturers to suppliers. The income tax amendment seeks to remedy the issue.

According to the Micro, Small, and Medium Enterprises Development (MSMED) Act of 2006, the buyer must pay the MSME supplier within 45 days of accepting the products or services delivered.

Finance Minister Nirmala Sitharaman has mentioned the issue multiple times since the pandemic, urging businesses to make prompt payments.

"It's a positive thing; more teeth provided by the new rule are beneficial. This should be implemented strictly. There may have been some hurt, but awareness was present. There could be a loss of business. The new rule should be maintained and enforced," said Ashok Saigal, co-chairman of the Confederation of Indian Industry MSME Council.

He said the issue is primarily about buyers' access to finance or a credit gap in the banking industry.

"It will be a trade-off between taxation and extra borrowing costs. If the buyer has been in business and has a good reputation, obtaining financing should be straightforward.

Businesses should find a mechanism to secure financing within 45 days in order to make payments to MSMEs." Saigal explained.

In addition, the government has put in place procedures to guarantee that these payment terms are followed, such as the Trade Receivables Discounting System (TReDS), which assists MSMEs in receiving payments on time by facilitating invoice discounts.

The TReDS platform allows MSME sellers to discount their invoices/bills of exchange against major corporations, including government departments and public sector organizations, using an auction method to achieve timely receivables at competitive market prices.

(studycafe.in – 06/03/2024)

UNEMPLOYMENT RATE IN INDIA (2008 TO 2024): CURRENT RATE, HISTORICAL TRENDS AND MORE

Unemployment is a critical issue that continues to challenge the economic landscape of India. As one of the world's most populous nations with a diverse workforce, fluctuations in the unemployment rate have far-reaching implications for the country's growth and development. So, what is the current unemployment rate in India?

The latest data indicates a glimmer of hope, as India's unemployment rate has recently declined. According to the National Sample Survey Survey (NSSO), the unemployment rate for individuals aged 15 years and above in urban areas decreased to 6.8 percent during January-March 2023 from 8.2 percent a year ago. This positive development suggests a potential turnaround in the job market amidst the prevailing economic complexities. However, continued vigilance and effective policy measures remain crucial to foster sustainable job growth and secure the nation's future prosperity.

In this blog, we discuss the current unemployment rate in India a little more in-depth, along with the unemployment rate in the last ten years.

The Current Unemployment Rate of India

The unemployment rate witnessed a sharp decrease in January 2024. According to the latest data from the Centre for Monitoring Indian Economy (CMIE), an independent think-tank, the unemployment rate in India stood at 6.8 percent in January. The unemployment rate in India saw a decrease of 1.9 percent in a month, as it stood at 8.7 percent in December last year.

The unemployment rate in January 2024 has been the lowest in the past 16 months. However, unemployment among youth aged between 20 and 30 has registered an increase in the Oct-Dec quarter of 2023. Unemployment in the youth aged between 20 and 24 increased to 44.49 percent, which was 43.65 percent in the July-September quarter. Similarly, unemployment among the youth aged between 25 and 29 increased to 14.33 percent in the Oct-Dec quarter of 2023, which stood at 13.35 percent in the previous quarter.

The recent weather patterns across the country have brought about significant changes in economic conditions. As the rains have covered large parts of India, impacting nearly half of the agricultural land, expectations of higher farm production have risen. This positive development has the potential to contribute to overall economic growth and improve the labour demand in the agriculture sector.

On the other side of this coin is the uptick in Mudra loan disbursements, startup registration and an increased number of tax returns, which suggests a different picture of people choosing to be entrepreneurs and micro-entrepreneurs. The number of people engaged in self-employment, including unpaid household work or running a small business, increased to 57.3 percent in the period under review from 55.8 percent a year ago.

These changing trends in labour demand and employment rates call for thoughtful policy measures to address the prevailing economic challenges and ensure sustainable growth in rural

and urban areas. It highlights the importance of diversifying economic activities to create more employment opportunities and bolster the country's financial resilience.

Unemployment rate in India : Historical Data

If you are wondering about the unemployment rate last ten years or 15 years, we have the data in a tidy little chart for you:

Year	Unemployment Rate (percent)
2024	6.57 (January 2024)
2023	8.00
2022	7.33
2021	5.98
2020	8.00
2019	5.27
2018	5.33
2017	5.36
2016	5.42
2015	5.44
2014	5.44
2013	5.42
2012	5.41
2011	5.43
2010	5.55
2009	5.54
2008	5.41

Source: CMIE

How is the current employment rate calculated

The past and current unemployment rate in India is a critical economic indicator expressed as a percentage that varies based on the prevailing economic conditions. When job opportunities become scarce during economic downturns, unemployment tends to increase. Contrarily, during economic growth and prosperity periods, with many job opportunities available to the public, the unemployment rate is expected to decline.

The formula to calculate the current unemployment rate in India is as follows:

Unemployment Rate = Number of Unemployed Persons / Civilian Labor Force

Or,

Unemployment Rate = Number of Unemployed Persons / (Number of Employed Persons + Number of Unemployed Persons)

To be classified as unemployed, an individual must meet specific criteria:

They must be at least 16 years old and available to work full-time in the last four weeks. They should be actively seeking employment during this period. Some exceptions include individuals who are temporarily laid off and actively looking to rejoin their previous jobs.

Major Economic Events Impacting the Unemployment Rate in India in the Past

Throughout our economic history, several significant events have significantly impacted the unemployment rate in India.

1. **Global Financial Crisis (2008-2009):** The 2008 global financial crisis severely affected India's economy, leading to a slowdown in growth and reduced employment opportunities in various sectors.

2. **Demonetisation (2016):** The government's decision to demonetise high-value currency notes in 2016 caused economic disruptions, particularly in the informal sector, resulting in temporary job losses.

3. **Goods and Services Tax (GST) Implementation (2017):** The introduction of GST aimed to simplify the tax structure, but it initially caused short-term disruptions in the economy, affecting businesses and employment.

4. **Covid-19 Pandemic (2020):** The Covid-19 pandemic and the subsequent lockdown measures profoundly impacted the Indian economy, resulting in a surge in unemployment as businesses closed and economic activities came to a standstill.

5. **Inflationary Pressures:** India has also faced inflationary pressures over the years, influencing the current unemployment rate in India. High inflation rates can erode the purchasing power of consumers, leading to reduced demand for goods and services. This can have a cascading effect on businesses, resulting in cost-cutting measures, including layoffs and hiring freezes, leading to higher unemployment rates.

-: JILTA : -

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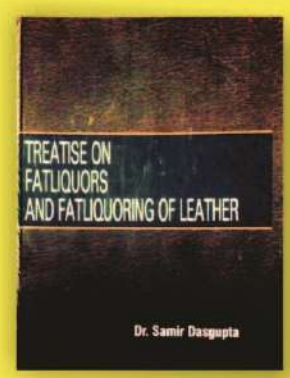

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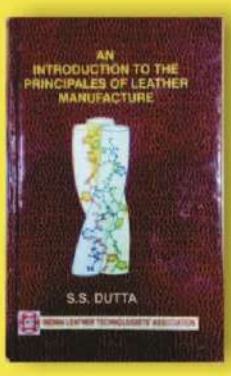

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Indian Leather Technologists' Association

[A Member Society of International Union of Leather Technologists' and Chemists Societies]

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History and Activities of Indian Leather Technologists' Association

Registration No. KOL RMS/074/2022-24

The Indian Leather Technologists' Association (ILTA) was founded by Late Prof. B. M. Das, the originator of Das-Stiasnay theory and father of Indian Leather Science on 14 th August' 1950. The primary objectives of the oldest Leather Technologists' Association which celebrated its Diamond Jubilee year in the 2010, are:

- To bring all concerned with the broad spectrum of the leather industry under one umbrella.
- To organize seminar, symposium, workshop in order to create information, knowledge and latest development for the benefit of all concerned. To offer a common platform for all to interact with each other in order to understand each other's problems and prospects.
- To publish monthly journal as a supplement to those above objectives. The monthly journal of ILTA is known as journal of Indian Leather Technologists' Association and is the most widely circulated technical journal concerning leather technology.
- To publish text books for the benefit of students at various levels of study, for the researchers and industry.
- To have interface between urban and rural sector.
- To assist Planning Commission, various Government Institutions, Ministry and autonomous bodies to formulate appropriate policies acceptable and adoptable to the industry.
- To organize practical training and to provide skilled manpower and to motivate good students for study.
- To conduct activities related to the growth of the export of leather and leather goods from India.

ILTA also organizes Prof. B. M. Das Memorial Lecture every year during the Foundation Day Celebrations on 14 th August and Sanjoy Sen Memorial Lecture on 14 th January, the birthday of our late President for several decades. Many reputed scientists, industrialists and educationists have delivered these prestigious lectures. Foreign dignitaries during their visits to India have addressed the members of ILTA at various times.

ILTA have published the following books:

1. An Introduction to the Principles of Physical Testing of Leather by Prof. S.S. Dutta
2. Practical Aspects of Manufacture of Upper Leathers by J. M. Dey
3. An Introduction to the Principles of Leather Manufacture by Prof. S. S. Dutta
4. Analytical Chemistry of Leather Manufacture by P. K. Sarkar
5. Comprehensive Footwear Technology by Mr. Somnath Ganguly
6. Treatise on Fatliquors and Fatliquoring of Leather by Dr. Samir Dasgupta
7. Synthetic Tanning Agents by Dr. Samir Dasgupta
8. Hand Book of Tanning by Prof. B. M. Das

ILTA presents awards in the name of Prof. B. M. Das Memorial, Sanjoy Sen Memorial and J. M. Dey Memorial Medals to the top rankers at the University graduate and post graduate levels. J. Sinha Roy Memorial Award for the author of the best contribution for the entire year published in the monthly journal of the Indian Leather Technologists' Association (JILTA). From the year 2023 ILTA has started to present a Scholarship namely Prof. Moni Banerjee Memorial Scholarship to a Student of B.Tech / M.Tech Leather Technology who is meritorious but financially crippled.

ILTA is the Member Society of IULTCS (International Union of Leather Technologists' and Chemists Societies) which is a 125 years old organization. The International Congress of this union is held in different locations of the world once in two years. In its 125 years history, for the first time the Congress was held in January 1999 outside the developed countries and that too in India at CLRI, Chennai. Indian Leather Technologists Association organized the Congress under the able leadership and guidance of Late Sanjoy Sen, the then President of ILTA and IULTCS and Dr. T. Ramasami, the then Vice-President of ILTA and Director, CLRI, Chennai. In 2017 IULTCS Congress was successfully held again at Chennai, India for the second time.

In order to promote and provide marketing facilities, to keep pace with the latest design and technology, to have better interaction with the domestic buyers, ILTA has been organizing LEXPO fairs at Kolkata from 1977, Siliguri from 1992 and Durgapur from 2010. To help the tiny, cottage and small-scale sectors industries in marketing, LEXPO fairs give the exposure for their products. Apart from Kolkata & Siliguri and Durgapur, ILTA have held LEXPO at Bhubaneswar, Gangtok, Guwahati, Jamshedpur and Ranchi. In commensurate with the time, demand and new perspective of the modern leather users, ILTA has started to organize LEXPO at Kolkata from 2022 in a new shape with the Manufacturers and Exporters of Leather Goods from all over India.

ILTA has celebrated its Golden Jubilee with a year-long programme from 14 th August' 2000 to 13 th August' 2011 along with the first conference of South East Asian Countries at Netaji Indoor Stadium, Kolkata.

ILTA has also celebrated its Diamond Jubilee with a year long programme from 14 th August' 2010 to 13 th August' 2011 which included National Seminars, B. M. Das Memorial Lecture, Sanjoy Sen Memorial Lecture, Moni Banerjee Memorial Lecture, Y. Nayudamma Memorial Lecture and 3 day's AICLST (Asia International Conference on Leather Science and Technology) at Hotel 'The Stadle' at Salt Lake City, Kolkata.

The Association's present (as on 31.03.2023) strength of members is around 550 from all over India and abroad. Primarily the members are leather technologists passed out from Govt. College of Engineering and Leather Technology – Kolkata, Anna University – Chennai, Harcourt Butler Technological Institute – Kanpur, B. R. Ambedkar National Institute of Technology – Jalandhar and Scientists and Research Scholars from Central Leather Research Institute (CLRI).

In order to strengthen its activities, ILTA have constructed its own six storied building at 44, Shanti Pally, Kasba, Kolkata – 700107, West Bengal, India and have named it as "Sanjoy Bhavan".

This Association is managed by an Executive Committee duly elected by the members of the Association. It is absolutely a non-profit making voluntary organization working for the betterment of the Leather Industry. None of the Executive Committee members draws any remuneration for their services rendered but they get the satisfaction of being a part of this esteemed organization.

ILTA
Since 1950

Indian Leather Technologists' Association
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