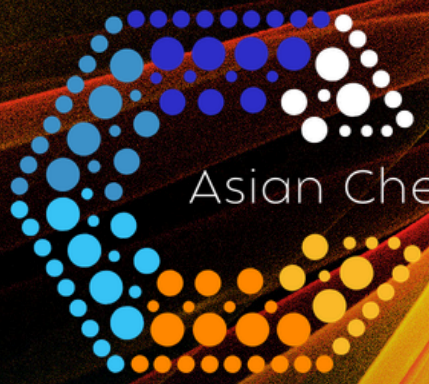

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PROGRAM REPORT

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Chemicals at a Crossroads: CEO Roundtable on Regulation, Sustainability, and Growth

CEO Roundtable

The ACF CEO Roundtable brought together senior industry leaders, compliance experts, and trade representatives to discuss the evolving landscape of chemical regulation in India, with particular emphasis on ICMSR, Quality Control Orders (QCOs), MSME preparedness, logistics compliance, data generation, PFAS management, and global regulatory alignment. There was a broad consensus among the panellists that chemical regulation in India is both necessary and inevitable, not only to protect human health and the environment, but also to strengthen India's credibility in international trade and regulatory negotiations.

The Roundtable discussions were informed by findings from a recent industry survey conducted as part of the "Aligning India's Chemical Industry with Global Compliance Requirements" white paper, which captured perspectives from CXOs and regulatory professionals on preparedness, compliance costs, and regulatory gaps. The survey results provided an empirical backdrop to the concerns and recommendations raised during the session.

While large enterprises generally are capable of absorbing new regulatory requirements, panellists repeatedly emphasized that SMEs and MSMEs face disproportionate compliance challenges, due to limited resources, infrastructure gaps, fragmented regulatory oversight, and high logistics costs. At the same time, however, speakers cautioned that regulatory dilution or blanket exemptions would undermine credibility, particularly with regard to WTO principles. Instead, they emphasized the need for a phased, risk-based, and pragmatic implementation, supported by capacity building, realistic timelines, and robust enforcement.

The Roundtable also highlighted persistent systemic issues, including overlapping authorities, inconsistent enforcement, repeated deadline extensions, underdeveloped digital infrastructure, and weak logistics compliance. While emerging scientific tools such as in-silico methods were recognized as valuable for reducing costs and animal testing, it was emphasized that they should not be seen as substitutes for robust science in complex or high-risk cases. A shared view emerged across all interventions that a regulation should function as a foundation for sustainable growth rather than an obstacle, provided it is coherent, predictable, and supported by effective governance.

The CEO Roundtable collectively recommended that India should move toward establishing a robust, credible, and harmonized chemical regulatory framework built on phased and risk-based implementation rather than immediate, uniform compliance. While maintaining uncompromised health, safety, and environmental standards, regulations should provide structured transition periods, volume-based thresholds, and realistic timelines, particularly to support SMEs and MSMEs. Rather than granting regulatory exemptions, the focus should be on targeted capacity building, technical support and providing access to institutional expertise. Regulatory credibility must be reinforced through fixed transition periods and consistent enforcement to avoid undermining trust through repeated deadline extensions.

The Roundtable emphasized the need for regulatory consolidation and clearer accountability, reducing fragmentation across authorities and improving coordination between central and state bodies. Digital tools such as the ChemIndia portal should evolve through a transparent, multi-stage roadmap, with a clear purpose, strong data protection measures, and simplified initial data requirements. Scientific flexibility should be embedded through the controlled use of in-silico, QSAR, and read-across approaches, while recognizing their limitations for complex substances.

Logistics compliance must be fully integrated into chemical regulation, with clearer alignment to international dangerous goods frameworks, practical warehousing requirements, and stronger enforcement mechanisms. For substances of concern such as PFAS, a value-chain-based, segmented, and phased approach was recommended to allow time for the development of safe alternatives, while avoiding disruptive, one-size-fits-all bans. Finally, it was identified that sustained and structured dialogue between industry, regulators, trade bodies, academia, and logistics stakeholders is essential to ensure that India's chemical regulatory system supports public health, environmental protection, export competitiveness, and long-term industrial growth.

Mr. Karthik Nilagiri (Senior General Manager, Reliance Industries Ltd.):

Mr. Karthik Nilagiri emphasized that while India may not have a regulatory framework as comprehensive as EU REACH, chemicals in India have long been subject to regulation and control. The current challenge, however, lies in the broader economic environment. Global market tightness, geopolitical uncertainties, and policy-related pressures have created difficult business conditions, which are being felt most severely by small and medium-sized enterprises (SMEs).
Mr. Nilagiri highlighted that large companies generally have the financial resources, manpower, and institutional capacity to implement new regulations. In contrast, SMEs face significant constraints and therefore experience the greatest compliance burden. He argued that any effective policy must be designed with the weakest and most vulnerable segments of the industry in mind. Regulations framed only around the capabilities of large players risk overlooking their real-world impact on smaller companies.

From a chemical policy perspective, compliance is often assumed across the industry, but the real challenge arises at the level of very small and micro enterprises. These companies primarily need time and support. Mr Nilagiri stressed the importance of advocacy and capacity-building initiatives, and suggested revisiting compliance thresholds under frameworks such as ICMSR. Drawing a parallel with EU REACH, he noted that introducing flexibility, such as volume-based thresholds, could significantly ease the burden on SMEs.

He proposed that newly established companies or those producing very small volumes should be granted additional time before full compliance is required. For example, enterprises manufacturing below defined tonnage thresholds could be given time to develop technical capability and scale operations. Given India's federal structure and regional diversity, a uniform and immediate compliance requirement may not be practical for all.

Referring to experiences with Quality Control Orders (QCOs), he observed that while large companies were able to comply relatively quickly, many smaller firms struggled. The WTO's principles of non-discrimination means that the same requirements apply to domestic and foreign companies alike, which puts disproportionate pressure on SMEs. A phased, volume-based compliance approach could help to address this imbalance.

Mr. Nilagiri also emphasized that chemical regulations ultimately exist to protect people and public health. While resistance to new regulations is natural, the broader public interest must prevail. At the same time, limited, structured flexibility for SMEs would enable them to adapt without undermining regulatory objectives.

Mr. Nilagiri concluded by noting that both large and small Indian companies already comply with multiple international chemical regulations, demonstrating that the capability exists. What SMEs need is targeted support, reasonable timelines, and proportionate regulatory flexibility. While equality before the law remains essential, phased and pragmatic compliance pathways could enable SMEs to grow and stabilize, ultimately achieving full compliance.

Mr. Anupam Kaul (Chair, Executive Committee, Regulatory Representatives and Managers Association [RRMA]):

Mr. Anupam Kaul steered the discussion toward assessing the usefulness of the industry survey and its relevance for shaping future policy. He emphasized that the survey has already begun informing dialogue around ICMSR, including the development of an evolving regulatory roadmap. However, he noted an important limitation: in its current form, the ChemIndia portal, cannot yet be considered a true chemical inventory, as it lacks comprehensive reporting requirements and clear regulatory authority, and currently lists only a limited number of chemicals.

He also highlighted a critical trade insight: nearly 60% of India's chemical exports go to highly regulated markets where India faces a significant trade deficit. This underlines the urgent need for India to build strong domestic regulatory capacity, not only for internal governance but also to engage credibly in international trade and regulatory negotiations, including those relating to ongoing Free Trade Agreements (FTAs). He pointed out that, while tariff provisions in FTAs are often finalized early, non-tariff measures and Technical Barriers to Trade remain negotiable, offering India a strategic opportunity to shape outcomes.

Turning to India's regulatory approach, Mr. Kaul questioned whether Quality Control Orders (QCOs) alone are sufficient given the vast chemical universe they seek to address. While acknowledging the importance of QCOs, especially for certain commodities, he raised concerns about repeated deadline extensions, which reduce predictability and undermine regulatory credibility. In contrast, he noted that global best practices typically follow fixed transition periods with firm enforcement timelines. Mr. Kaul further observed that, unlike sectors such as pharmaceuticals and food, which benefit from dedicated regulators, the chemical sector in India has historically been fragmented and lightly regulated, with most regulatory developments only emerging in the past decade. This raises fundamental questions about the way forward.

Finally, Mr. Kaul emphasized the challenges posed by the multiple authorities and overlapping laws governing chemicals. Drawing parallels with the food sector, he suggested that regulatory consolidation could improve coherence, capacity, and effectiveness. He also raised the possibility of a hybrid model, combining strong government regulation with industry-led self-regulation, particularly for emerging issues such as PFAS. He concluded by underscoring the importance of sustained, structured dialogue between industry, regulators, and other stakeholders in order to support the evolution of a balanced and forward-looking chemical regulatory framework in India.

Mr. Shisher Kumra (Executive Director, Global Product Compliance Group):

Mr. Shisher Kumra emphasized that the objective of chemical regulation is not to eliminate regulatory frameworks, but rather to design them in a way that appropriately supports the weakest segments of the industry, particularly SMEs. He noted that such regulations typically include phased implementation, with initial compliance timelines followed by extended transition periods to allow industry to adapt.

However, Mr. Kumra highlighted a critical challenge: under WTO obligations, any regulatory exemptions or advantages granted to Indian SMEs would also need to be granted to foreign SMEs. This raises concerns about regulatory circumvention, whereby large companies could potentially exploit exemptions by routing supplies through smaller entities, thereby undermining regulatory integrity. Therefore, the key question is how to balance social and policy considerations with the need to maintain a robust and credible regulatory framework.

Mr. Kumra also discussed the practical constraints affecting data generation and compliance under ICMSR. With only a limited number of GLP-certified laboratories currently available, the authorities have recognized the difficulty and cost of generating full datasets, particularly if companies are forced to rely on overseas laboratories. As a result, compliance timelines have been adjusted, and simplified registration pathways have been introduced, providing companies with additional time up to two years to generate the required data while domestic laboratory capacity is being developed.

In this context, prediction-based and in-silico approaches have been accepted as interim solutions where experimental data is not readily available and, in some cases, have been fully accepted. Mr. Kumra noted that international precedents, such as REACH under ECHA, allow the use of such approaches to a limited extent. However, he cautioned that in-silico methods are not suitable for high-end toxicological endpoints, where the required level of precision cannot yet be reliably achieved.

Overall, Mr. Kumra underscored the need for pragmatic, phased regulation that balances scientific rigor, international obligations, and the practical realities faced by the industry.

Dr. Hariom Sharma (Head – PSRA, Huber group India Pvt. Ltd.):

Dr. Hariom Sharma emphasized that India already possesses the natural beauty and environmental potential often associated with countries such as Switzerland, Canada, or New Zealand. Visible improvements in air quality during the COVID lockdowns demonstrated that solutions to pollution are achievable if industrial emissions are controlled.

He highlighted that the challenge is twofold: industrial responsibility and governance. Education and awareness are critical not only for large corporations but also for small and medium-sized enterprises, to ensure that all stakeholders understand their role in environmental protection. Using the analogy of basic safety practices such as helmets and seatbelts, he illustrated that having standards is insufficient without proper enforcement and compliance.

Dr. Sharma stressed the need for strong political will and robust regulatory frameworks in India. He pointed out that while Indian industries celebrate international approvals, domestic regulatory standards often lack the same recognition and enforcement. He cited the European ECHA model as an example of a profitable and effective regulatory system that ensures compliance.

He also emphasized the importance of regulatory sustainability, stating that strong laws and enforcement are as crucial as operational sustainability for protecting the environment and ensuring safe business practices. For example, despite advocating for stricter chemical regulations such as banning hazardous substances, compliance in India often only occurs when export requirements demand it. This is partly due to the absence of clear classification systems, such as GHS.

In conclusion, Dr. Sharma called for education, advocacy, and enforcement, emphasizing that regulations are not obstacles, but rather the foundation for sustainable business, environmental protection and a better quality of life in India.

Dr. Abhay Deshpande (Director – Global Innovation & Strategy, JRF):

Dr. Abhay Deshpande discussed how modern computational and in-silico tools, such as QSAR, can support chemical regulation, particularly for MSMEs, by enabling efficient hazard and risk predictions. These methods can significantly reduce the need for extensive laboratory testing, such as multi-batch analyses for impurities, while still demonstrating that products are not genotoxic, carcinogenic, or reprotoxic. Leveraging existing publicly available data from platforms such as REACH can further minimize redundancy and costs.

He emphasized that minimizing animal testing is both feasible and desirable. For example, if a company has already proven the absence of impurities across multiple batches, regulators could accept that evidence instead of requiring additional testing, thereby reducing the compliance burden.

However, Dr. Deshpande noted that computational and in-vitro methods have limitations for new or complex substances such as UVCBs or novel chemical mixtures. In such cases, animal studies remain necessary to reliably assess absorption and adverse effects. For established products, even international regulators such as ECHA do not require repeated animal testing, highlighting the potential for India to adopt more pragmatic approaches. In summary, Dr. Deshpande advocated for a balanced approach that uses in-silico and existing data to reduce costs and animal use, while recognizing that certain complex cases will still require traditional testing to ensure safety and compliance.

Mr. Venkaiah Annamaneni (GM-PSRA, Atul Ltd.):

Mr. Venkaiah Annamaneni addressed the issue of PFAS by highlighting how increased awareness of chemical risks often leads to fear. He argued that the real challenge lies in identifying practical solutions to reduce or manage these risks. Mr. Annamaneni illustrated this by discussing the evolution of household cookware, from steel and aluminum products to non-stick ones, and now back to caution against non-stick materials due to concerns over PFAS and other chlorinated substances.

He emphasized that, once a chemical is recognized as potentially harmful, responsible action requires one of three approaches: identifying safer alternatives; implementing effective risk-mitigation measures; or, if neither is possible, refraining from its use altogether. Continuing to use a chemical purely for commercial gain at the expense of human health and environmental safety is not acceptable.

In conclusion, Mr. Annamaneni stressed that responsible decision-making must prioritize the well-being of people and the planet over profit, particularly when dealing with substances of emerging concern.

Mr. Suneet Kumar Yadav (Vice President Intellecual Property and Statuatory Compliance, Süd Chemie):

Mr. Suneet Kumar Yadav explained the current regulatory landscape using a simple analogy: rather than leaving each stakeholder to arrange their own “raincoat” for compliance, a coordinated government-lead “umbrella” approach would be far more efficient. He added that fragmented and individual compliance efforts increase the burden and inefficiency across the system.

Mr. Yadav emphasized the need for strong alignment among government, industry, academia, and other stakeholders to ensure synchronized and synergistic regulatory implementation. Such coordination would not only accelerate progress but also reduce uncertainty and apprehension within the industry. He highlighted prevailing concerns around data submission to regulatory portals, including questions related to data protection, transparency of purpose, and potential disadvantages for smaller organizations compared to larger ones. These concerns, if unaddressed, contribute to hesitation and resistance.

In contrast to multinational companies, he noted that global organizations typically adopt a proactive approach. They mobilize dedicated regulatory teams early on, analyse draft regulations, conduct internal training, and prepare well in advance. In comparison, many domestic stakeholders remain reactive, only engaging after regulations are finalized.
In conclusion, Mr. Yadav stressed that effective regulatory compliance requires a unified, collaborative approach. Government support must be complemented by industry ownership, enabling all stakeholders to move forward collectively, confidently, and efficiently under a shared framework.

Mr. Siddhartha Ghosal (CEO, Dow Chemicals Ltd.):

Mr. Siddhartha Ghosal highlighted that chemicals are fundamental to modern life and that nearly all essential products rely on them. He emphasized that chemicals themselves are not inherently harmful, but rather effective management and regulation are key. From a multinational perspective, he noted that global companies manufacture largely identical products across regions, making it impractical and economically unviable to customize products for entirely different national regulatory regimes. This underscores the importance of regulatory harmonization and convergence to support global trade and exports.

He observed that many developed economies have mature chemical regulatory systems that have been developed over decades, which makes it easier for them to introduce additional regulatory requirements. In contrast, developing economies such as India must carefully design regulations that balance safety with growth and competitiveness. While strong chemical regulation is essential in India to ensure a level playing field and protect health and safety, the regulation should be risk-based and focused on substances of concern. It should also be supported by realistic and uniform transition timelines across all industry segments.

Mr. Ghosal also drew attention to the regulatory complexity in India, characterized by multiple agencies and overlapping laws, which increases the compliance burden for both domestic and multinational companies. In a global context, he noted that China dominates chemical production, while India's share remains relatively small but poised for growth. However, over-regulation, particularly when not aligned with global practices, could hinder India's ambition to expand its chemical and petrochemical sector at a time when other regions are facing stagnation due to excessive regulatory pressures.

He further stressed the importance of adopting a value-chain-based regulatory approach. Core petrochemical feedstocks form the foundation of thousands of downstream products, including pharmaceuticals and specialty chemicals. Regulations that constrain these feedstocks disproportionately could disrupt the entire value chain and undermine downstream industries.

Regarding PFAS, Mr. Ghosal explained that the global regulatory focus is largely driven by groundwater contamination, particularly from firefighting foams and PFAS-based surfactant manufacturing. While regulatory scrutiny in the US and Europe is intensifying, measurement methods and risk assessment frameworks are still evolving. Given the complexity of PFAS chemistry and the limited availability of immediate alternatives, rapid and complete phase-outs are not realistic. He advocated for a segmented, phased and practical approach, prioritizing monitoring, accurate measurement, and targeted regulation, rather than the direct replication of international regulations. From an Indian perspective, PFAS management should be embedded within a broader, context-specific regulatory framework that balances environmental protection with industrial feasibility.

Mr. Ramkumar Shankar (Managing Director, Sanmar Group):

Mr. Ramkumar highlighted that the global regulatory landscape currently sits at two extremes: Europe, which is struggling with over-regulation, and India, which is still in the process of strengthening its regulatory framework. Drawing from recent interactions with European manufacturers, he noted a deeply pessimistic outlook driven by a convergence of challenges, including geopolitical disruptions resulting from the Russia–Ukraine conflict, sharply rising energy costs, weakened demand following the pandemic, and continued exposure to low-cost imports due to low tariff barriers. Despite strong technical regulations, these pressures have led to frequent plant closures and growing concerns that Europe is effectively deindustrializing itself.

Turning to India, Mr. Ramkumar emphasized that the ongoing debate around Quality Control Orders (QCOs) must be seen in a global context. Technical Barriers to Trade are a long-established and widely adopted WTO practice, with India implementing far fewer such measures than most countries. Therefore, India should not hesitate to adopt them. The real issue lies not in the concept of QCOs, but in their implementation. Any shortcomings should be corrected without dismantling the overall framework.

He also cautioned that repeated extensions of compliance deadlines undermine regulatory credibility. Companies that invested early in compliance feel disadvantaged, while delayed enforcement discourages proactive adherence in the future. This weakens trust in the system and risks long-term compliance fatigue.

Finally, Mr. Ramkumar stressed the shared responsibility of the chemical industry to uphold high compliance standards. While chemicals are essential to modern life, isolated incidents continue to damage the industry's reputation. In India, fragmented regulations and inconsistent enforcement sometimes lead to misuse, diverting regulations from their true purpose. He concluded by urging industry leadership by example and calling on regulators to harmonize and transparently enforce rules, ensuring that regulations protect health, safety, and the environment rather than becoming tools of inefficiency or rent-seeking.

Ms. Roma Shah (CEO, Eastmen Chemicals):

Ms. Roma Shah added to the MSME perspective, more specifically from the metallic salts sector – particularly nickel and cobalt salts. She noted that these substances are already regulated and that nickel is now covered under BIS standards. She emphasized that regulation is both inevitable and necessary for the chemical sector, especially given its significant contribution to India's economy and its position as a leading global producer of chemicals. Alignment with international regulatory systems is therefore essential.

However, Ms. Shah also highlighted the need for stronger alignment between regulations and on-the-ground realities. Gaps in infrastructure, capacity building, and domestic manufacturing capabilities especially when compared to countries such as China, continue to pose challenges for MSMEs. Logistics costs were cited as a major concern, with domestic transportation sometimes costing as much as or more than international shipping, disproportionately impacting smaller businesses.

Ms. Shah stressed that, while export incentives are helpful, a robust regulatory support ecosystem is equally important. This includes a user-friendly regulatory portal, access to dedicated support or helplines for compliance assistance, and collaborative platforms such as leadership or innovation labs for structured dialogue on regulatory preparedness.
In conclusion, she reaffirmed industry support for regulation and global harmonization, while underscoring the need for parallel investments in infrastructure, logistics, capacity building, and regulatory support, to ensure MSMEs can comply effectively and remain competitive.

Ms. Komal Doshi (Director, Eastmen Chemicals):

Ms. Komal Doshi shared an MSME perspective on logistics compliance, highlighting that strict adherence to regulations is both achievable and actively practiced. Representing Eastmen Chemicals, she explained that the company stores hazardous materials in warehouses in India and overseas and fully complies with all applicable regulatory requirements.

She noted that their operations involve hazardous classes such as 5.1 and 9, and that both internal teams and external warehouses maintain high safety and compliance standards. Warehousing partners play a proactive role by guiding companies on their regulatory obligations and refusing to compromise on safety. Ms. Doshi cited the example of a recent air shipment to Brazil that was held back until proper clearance for Class 5.1 storage was obtained, demonstrating strong enforcement in practice.

Ms. Doshi emphasized that continuous guidance from logistics partners has significantly improved awareness across her organization. Based on her experience, she concluded that when supported by responsible stakeholders, logistics compliance is not as poor as it is sometimes perceived.

Mr. Raghuveer Kini (Executive Director, Chemexcil):

Mr. Raghuveer Kini began by acknowledging and appreciating the efforts of Mr. Shisher Kumra and his team in advancing regulatory initiatives, emphasizing that chemical regulation is both necessary and inevitable. While significant progress has been made, he noted that much more remains to be done, particularly from an export-oriented perspective.

He then highlighted a major trade challenge, stating that approximately 14–15% of India's chemical exports valued at around USD 4 billion, have been adversely affected by recent geopolitical and policy developments. This creates an urgent need to identify alternative markets, where regulatory preparedness will play a decisive role in market access and sustainability.
Mr. Kini also expressed serious concern over the underutilization of Free Trade Agreements (FTAs). Despite having been in place for years, FTAs are not being leveraged effectively, largely due to gaps in awareness, education, and practical understanding of regulatory and export processes. He stressed that responsibility for this gap lies collectively with industry bodies, policymakers, and other stakeholders.

He pointed out that nearly 65% of Indian exporters are MSMEs, which are often managed by very small teams handling everything from sales to compliance. Many lack even basic knowledge of export documentation, underscoring the need for extensive capacity building, awareness programs, and handholding support.

Mr. Kini concluded by emphasizing the importance of developing a strong, well-defined domestic regulatory framework supported by an effective digital portal. He welcomed Chemexcil's active collaboration with the Ministry of Chemicals on this initiative and acknowledged the valuable contributions of experts such as Mr. Kumra and Dr. Nair.

Mr. Radharamanan Panicker (Managing Director, Dangerous Goods Management [DGM] India):

Mr. Radharamanan Panicker highlighted the critical but often overlooked role of logistics in chemical compliance. He noted that, despite being responsible for transporting hazardous materials safely, logistics professionals rarely engage directly with manufacturers. While the survey indicated an encouraging appetite for compliance, the reality in chemical transport, especially of dangerous goods, is markedly different.

He also shared an example where MSC imposed costly audits in India due to widespread non-compliance by shippers, including false declarations and mislabeling of dangerous goods. This underscores that, while manufacturing compliance may be emphasized, logistics compliance is frequently ignored, resulting in financial losses, safety risks, and stricter requirements imposed by shipping lines.

Mr. Panicker stressed that India does have regulations for the transport of dangerous goods, including commitments under UN conventions, the IMDG Code and the ICAO Technical Instructions. However, enforcement and clarity are major issues. Road transport regulations such as ADR remain largely unimplemented, and law enforcement personnel often lack an understanding of the requirements for dangerous goods. Regulations such as the MSIHC, BIS standards, and PESO rules are confusing and inconsistently aligned with international norms, making compliance difficult.

Furthermore, he pointed out that warehousing regulations, particularly those concerning high-risk chemicals, are overly stringent and economically unviable. This inadvertently encourages cutting corners, thereby increasing safety hazards. Small companies face even greater challenges due to limited awareness and resources. Despite efforts such as educational webinars, achieving compliance remains extremely difficult under the current regulatory and enforcement framework.

In summary, while compliance is essential, the current regulatory environment in India is fragmented and unclear, and difficult to enforce. This poses significant challenges for logistics and chemical handling, particularly for small and medium-sized enterprises.

Mr. Sothi Selvam (Director General, Indian Chemical Council [ICC]):

Mr. Sothi Selvam expressed appreciation to the organizers and acknowledged the sustained and consistent efforts of Mr. Shisher and the team in advancing discussions on chemical regulation in India. He emphasized that although the subject has been debated for several years, meaningful progress is now beginning to take shape and that the work presented reflects a comprehensive and committed approach.

From the perspective of the Indian Chemical Council (ICC), he underscored the industry's commitment to responsible and sustainable growth. India's chemical industry, currently valued at approximately USD 220 billion, is poised for significant expansion. However, given the vast diversity of chemicals numbering in the hundreds of thousands, designing an effective regulatory framework is inherently complex. While India has initiated a chemical inventory, progress has been challenging, particularly when compared with countries such as Australia, which maintains an inventory of over 40,000 substances. Mr. Selvam reiterated that there is no debate on the need for a domestic chemical regulatory framework. Although the Indian industry complies with foreign regulations for exports, there is currently no comprehensive system governing chemicals placed on the Indian market. In this context, the ICC sees its role as a bridge between industry, regulators, and the government, and is advocating for a structured, pragmatic, and phased approach to regulation.

He highlighted industry concerns regarding the ChemIndia portal, noting resistance and implementation challenges, with only a limited number of chemicals registered so far. To address this, the ICC has initiated a review through its Product Stewardship Expert Committee to benchmark international chemical inventories and identify data requirements that could be simplified or deferred in the initial stages. He suggested that a clearly defined, multi-stage roadmap, developed in consultation with the industry, would support smoother implementation and better policy outcomes.

Mr. Selvam also pointed out that while the original intent behind the regulatory portal was to capture basic information on chemical production and imports, its scope expanded to include commercially sensitive data, which has added to industry concerns. On the issue of MSMEs, he stressed that health and safety regulations must remain non-negotiable, irrespective of company size, as the risks to human health are the same for all consumers. Rather than regulatory exemptions, MSMEs should be supported through capacity building, technical assistance, and access to institutional expertise, enabling them to meet regulatory requirements effectively.

In conclusion, Mr. Selvam emphasized that a balanced regulatory framework combining uncompromised health and safety standards with targeted industry support and phased implementation is essential for India's chemical sector to grow responsibly and sustainably.

Mr. Pradeep Nair (Vice President – Chemical Logistics and SCS, Goodrich):

Mr. Pradeep Nair highlighted the often-overlooked role of logistics in chemical regulation and policy discussions. He thanked the organizers for ensuring representation from the logistics sector, noting that logistics is frequently engaged only at the final stage of product movement, without adequate consideration of the operational challenges and cost differences between domestic and international transportation.

Addressing the issue of PFAS, he explained that while initial regulatory discussions had focused primarily on chemical manufacturers, the implications also extend significantly into logistics and transport infrastructure. Many critical logistics assets, such as ISO tank containers, depend on PFAS-based components, including gaskets and O-rings, for safety and performance. At present, there are no viable alternatives that can meet the same technical and safety requirements.

Through the International Tank Container Organisation (ITCO), representations have been made to regulators to highlight these dependencies. While the outcomes are still evolving, these efforts have helped to raise awareness that PFAS regulation impacts the entire value chain, not just upstream chemical production. Mr. Nair emphasized the need for a holistic, value-chain-based approach to PFAS regulation, that allows sufficient time for the development and validation of safe alternatives before broad restrictions are imposed.

He also drew attention to the challenges in the implementation and enforcement of existing safety regulations, particularly those governing the transport of dangerous goods. Although regulations require drivers carrying hazardous materials to be appropriately trained, enforcement is weak, and compliance can often be reduced to a procedural formality rather than a substantive safety measure.

He stressed that the core issue is not the lack of regulation, but the absence of clear accountability and effective monitoring. Responsibilities are fragmented across central and state authorities and multiple ministries, with no single authority clearly responsible for enforcement. The involvement of multiple agencies further complicates oversight.

Mr. Nair concluded that unless regulatory responsibilities are streamlined and accountability is clearly defined, even well-designed regulations will remain ineffective in practice. A stronger focus on implementation, coordination, and enforcement is essential to ensure safety and regulatory outcomes across the chemical logistics value chain.

Asian Chemicals Forum (ACF) 2025

About ACF 2025

The Asian Chemicals Forum (ACF) 2025 brought together regulators, industry leaders, and experts from Asia and around the world to discuss pressing topics in chemical management and compliance. During the two-day event, the forum featured an inaugural session with addresses by Indian and international dignitaries, followed by a series of panel discussions, each dedicated to a key theme. Speakers provided insights on topics ranging from promoting growth in India's chemical industry ("Make in India") to designing effective compliance indicators, phasing out hazardous substances such as PFAS, implementing the Globally Harmonized System (GHS) of classification in Asia, and examining global regulatory trends that impact Asian industries. The forum also saw the launch of two landmark publications on chemical regulation and GHS compliance, underscoring the emphasis on knowledge sharing.

In addition, several Memorandums of Understanding (MoUs) were signed, forging strategic partnerships between regulatory bodies, industry associations, and academic/technology institutions to strehgthen regulatory capacity and innovation. The session summaries below highlight key announcements – such as the book launches and partnership MoUs – as well as memorable quotes from speakers. Each session summary is organized by speaker and provides a clear account of what was discussed or presented, spotlighting notable statements and takeaways from each contributor.

Inaugural Session

The forum opened with a series of addresses by distinguished speakers representing Indian industry leadership and global institutions. The speakers welcomed the participants and set the tone by emphasizing the importance of regulatory compliance, sustainability, and international cooperation in the chemicals sector. The inaugural session concluded with the launch of two major publications on chemical regulatory compliance (see below for details). Key themes from the inaugural addresses included the role of forums such as the ACF in facilitating knowledge exchange, the necessity of robust standards and safety practices, and the increasing pressure on the chemical industry to align with global best practices.

Mr. Geert Dancet (Chair, Regulatory Representatives and Managers Association [RRMA] and Former Executive Director of ECHA):

Mr. Dancet opened the inaugural session with a welcome address that introduced the RRMA and set the context for the two-day forum. He described RRMA as a nonprofit association that brings together individuals and companies whose primary responsibility is compliance with chemicals legislation, both in India and internationally, and noted that the association is actively engaged in training and certifying the next generation of compliance professionals in this field. Moreover, Mr. Dancet expressed appreciation for the quality of the programme and the calibre of expert speakers assembled. He urged participants to engage actively, question the panels without hesitation, and draw fully on the diversity of perspectives in the room. "We must move beyond compliance checklists to a culture of shared responsibility," he concluded – welcoming everyone to Mumbai and expressing confidence that the forum would generate meaningful dialogue and tangible outcomes for the chemical regulatory community across Asia.

Dr. Satish Wagh (Chairman, Basic Chemicals, Cosmetics & Dyes Export Promotion Council Chemexcil):

Dr. Wagh noted that the presence of international organizations such as the OECD, UNEP, UNITAR, and ECHA underscored the forum's global relevance. In his address, Dr. Wagh highlighted how the forum's focus on environmental, social, and governance (ESG) issues, chemical stewardship, and lifecycle management would help companies improve their sustainability standards. He stressed that companies participating in such dialogues can stay ahead of regulatory risk, reducing the chance of compliance failures or export disruptions, which in turn gives a competitive edge to the industry.

Dr. Wagh also shared an overview of India's chemical industry. He noted the sector's diversity, with over 80,000 commercial products, and its significant contribution to India's GDP of around 7% . India is the sixth largest producer of chemicals globally (third in Asia) and a major player in the production of agrochemicals, dyes, and essential oils. Currently valued at USD 220 billion, the industry is projected to reach USD 300 billion by 2030 and USD 1 trillion by 2040. Dr. Wagh cited India's strong export performance (14th globally) and its resilience despite challenges, noting that India's chemical exports continued to grow even with 50% US tariffs. These figures underscore the industry's growth potential and the need for continued compliance and innovation. In closing, Dr. Wagh praised the forum for creating a platform to advance these discussions and encouraged "meaningful discussion" among stakeholders.

Mr. V. Gopinath (Deputy Director General, BIS):

As a senior official from the Bureau of Indian Standards (BIS), Mr. Gopinath focused on chemical safety standards and their role in accident prevention and risk management during the session. He outlined recent Indian standards for chemical safety, such as BIS IS 17889 for material safety data sheets and IS 15656 for hazard identification and risk assessment. These standards provide guidelines for the safe handling of chemicals. Mr. Gopinath emphasized that these standards are crucial to improving safety practices in the chemical industry: "Standards are going to play a major role in safety practices," he said, inviting all stakeholders to participate in standardization efforts. He described BIS's initiatives to engage stakeholders through electronic systems and open platforms for national standard-setting, reflecting a more inclusive approach to developing safety standards.

Importantly, Mr. Gopinath linked standards to a broader vision of a safer chemical industry. He urged that India must "ensure that we keep a safe environment during manufacture, transportation and final usage," and said that standards should help build systems to achieve this goal. "Let us work for a safer tomorrow," he appealed, emphasizing the shared responsibility of the industry and regulators in this endeavor. Global Product Compliance (GPC), as one of Chemexcil's partners, continues to support the Council and its member companies by providing regulatory compliance expertise to help them access global markets safely and efficiently.

Mr. Bob Diderich (Head of Environment, Health and Safety Division, OECD):

Representing the OECD, Mr. Diderich offered a global perspective on chemical management. He framed the discussions at the forum within the context of the recently adopted Global Framework on Chemicals (agreed upon in 2023) and the ongoing international efforts to harmonize chemical safety practices. In his remarks, Mr. Diderich highlighted that there are ongoing global initiatives to improve chemicals governance, and he reiterated the importance of tools such as the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). In fact, he identified GHS as one of the fundamental building blocks of sound chemicals management worldwide, a point that recurred throughout the forum.

Mr. Diderich pointed out that a key target of the new global framework is that "by 2030 all governments have implemented the GHS in all relevant sectors as appropriate for their national circumstances". This global goal underscores the urgency for countries like India, which is still in the process of adopting GHS, to establish the necessary regulations. He also mentioned ongoing OECD programs and international cooperation on chemical risk assessment and management, encouraging Asian economies to engage actively. By putting ACF's regional discussions into a global context, Mr. Diderich reinforced that Asian regulators and companies must keep up with international regulatory developments, such as EU REACH revisions and global PFAS restrictions, to remain competitive and ensure safety.

Mr. Ramkumar Shankar (Managing Director, Sanmar Group):

Mr. Shankar offered the perspective of a leading Indian chemical manufacturer. With over 25 years of experience in the chemical industry, he reflected on the major changes and challenges the industry has experienced as well as how these changes shape current priorities. He remarked that, given his experience, he thought about "what changes have happened over the last few years – that have brought the industry to where we are right now."

Mr. Shankar identified six major shifts that have defined this transformation: (1) the dramatic rise of China as the dominant force in global chemical production; (2) a fundamental shift in oil dynamics, from fears of peak supply to concerns over peak demand; (3) the rapid rise of environmental awareness and regulation, which risks being disruptive without adequate industry transition time; (4) significant demographic change, with ageing populations and declining fertility rates reducing spending power across major economies; (5) a transition from a bipolar to a multipolar geopolitical order, with conflicts and trade tensions disrupting supply chains and market stability; and (6) a structural shift from globalisation to localisation, with countries increasingly deploying tariff and non-tariff barriers, driving a sharp rise in the volume of chemical regulations introduced globally each year.

Mr. Shankar stressed that the chemical industry must adapt to these transformations. For instance, he noted the growing public and regulatory focus on safety incidents and referenced accident data to emphasize "how important this is" for the industry to address. He argued that proactive compliance and capacity building are essential to preventing incidents and maintaining the industry's license to operate. Additionally, Mr. Shankar highlighted the need for industry to engage constructively with regulators, transforming compliance from a burden into a collaborative effort for improvement. His address effectively bridged high-level policy discussions and on-the-ground industry realities, making the case that regulatory compliance and sustainable practices are critical to business continuity and growth, not just legal obligations. He concluded by affirming the importance of ACF, noting that it provides much-needed context and relevance for these discussions. He also expressed optimism that such fora will continue to grow in importance.

Mr. Ravi Kapoor (Chairman, Sustainability Committee, Indian Chemical Council; Chairman, Heubach Group India):

Mr. Kapoor offered insights on sustainability, innovation, and India's leadership role in driving the global chemical transition. Drawing from his extensive industry experience, he emphasized that sustainability is now a central pillar of competitiveness and corporate responsibility, not a peripheral agenda. He highlighted the growing alignment between India's manufacturing ambitions and global sustainability goals, noting that "green growth" and "responsible chemistry" are now strategic imperatives for the chemical sector.

Mr. Kapoor commended the establishment of the Regulatory Representatives and Managers Association (RRMA), calling it a timely and much-needed platform for India's chemical industry. He praised the RRMA for promoting structured dialogue between regulators, policymakers, and industry leaders, thereby improving regulatory preparedness and compliance culture across companies. He emphasized that initiatives like the RRMA are essential for advancing regulatory maturity and ensuring that Indian manufacturers remain aligned with evolving global frameworks.

He also discussed how Indian companies are increasingly integrating circular economy principles, waste minimization, and carbon reduction initiatives into their operations. He stressed that innovation, particularly through new materials, green processes, and collaborative R&D, is key to achieving both environmental and economic objectives. In closing, Mr. Kapoor lauded the ACF platform for providing continuity to RRMA's vision and for encouraging collective responsibility in sustainable development. He urged participants to view sustainability as an opportunity for global leadership, not merely as compliance.

Mr. Rupark Sarswat (Chief Executive Officer, India Glycols Ltd.):

In his address, Mr. Sarswat focused on the role of green chemistry and renewable feedstocks in reshaping the future of India's chemical industry. He noted that India's position as a fast-growing manufacturing hub offers a unique opportunity to transition to bio-based, low-carbon production models. Sharing India Glycols' experience as a pioneer in bio-ethanol and bio-based chemical production, he highlighted how sustainable sourcing, process innovation, and responsible value-chain management can strengthen global competitiveness.

Mr. Sarswat emphasized that transitioning from fossil-based to renewable inputs is both an environmental necessity and an economic advantage, because it reduces dependency on imported raw materials and opens new export opportunities. Mr. Sarswat also called for stronger policy frameworks and industry–academia partnerships to accelerate the adoption of green technologies. In closing, he applauded the ACF forum for advancing regional collaboration on sustainability and reaffirmed India Glycols' commitment to leading by example in the global shift toward cleaner chemistry.

Launch of Publications

A highlight of the inaugural session was the formal book-launch of two significant publications. These books are part of the Regulation Ready knowledge series by the RRMA and the Global Product Compliance (GPC) Group. They aim to empower compliance professionals with up-to-date knowledge.

"GHS Compliance: A Comprehensive Guide for Global Chemical Classification (Second Edition)" This updated guide offers a complete, up-to-date reference on the Globally Harmonized System of classification and labelling of chemicals. Now in its second edition, the guide provides clarity and practical guidance on chemical hazard communication from a global perspective. It was described as a "vital source" for professionals across industries, offering not only technical details but also insights into fulfilling chemical safety obligations worldwide. Forum organizers noted that GHS Compliance is a cornerstone reference for ensuring that companies align with international classification and labelling standards.

"**Compendium of Global Chemical Regulations (2025–2026): A Ready Reckoner for Compliance Professionals"** This comprehensive volume compiles key chemical regulatory frameworks from over 25 jurisdictions worldwide. Designed as a practical comparative guide, it "transforms complex legislation into actionable insights" for manufacturers, importers, regulators, and compliance managers. The compendium covers regulations from Europe, Asia, the Americas, Oceania, and Africa, making it a one-stop resource for understanding diverse global compliance requirements. It was highlighted that this book will help companies navigate varied regulatory landscapes by providing side-by-side comparisons and summary checklists of various national laws.

The Master of Ceremony remarked that these landmark publications exemplify the vision of GPC and RRMA to "empower compliance professionals with knowledge that ensures regulatory conformity while fostering safer products, stronger trust, and sustainable growth."

Session 1:
Strategies to further enable Make-in-India for the Chemical and Allied Sectors

About the Session

The first panel session explored how India can increase its domestic chemical manufacturing ("Make in India") while meeting global standards. Moderator Mr. Ravi Kapoor (Chairman, ICC Sustainability Committee) opened the discussion by noting India's paradox: despite being a major consumer and importer of chemicals, its share of global chemical production is relatively low. He emphasized that India is poised – almost "obligated" – to grow its chemical industry, and that this growth must be accompanied by strong compliance and regulatory frameworks to ensure that regulations do not become roadblocks. Mr. Kapoor set the context that India's chemical sector stands is at a pivotal point where global compliance expectations and domestic industrial goals must align. Key immediate steps include implementing a national GHS system and "targeted yet effective" Quality Control Orders (product safety standards) that raise the baseline without overburdening industry. The panel comprised industry executives and experts who shared their perspectives on enabling growth through policy, infrastructure, and innovation.

Mr. Sambit Patra (Head of Chemicals & Petrochemicals, Bain & Company):

Mr. Patra presented an analytical view of India's chemical industry potential and the strategies to realize it. He presented data showing India's status as a net importer of chemicals and the significant opportunity to replace imports with domestic production. "We are still a net importer of chemicals, around USD 30 billion, hence the need for Make in India," he noted. India can improve its trade balance by strengthening local manufacturing and supply chains, for example, through petrochemical clusters and incentives. Mr. Patra pointed out that an estimated USD 75 billion worth of chemical imports could be substituted by domestic output. This represents a significant growth avenue – "that is the India-for-India model," he explained.

Mr. Patra also discussed growth projections, stating that India currently holds approximately 4–5% of the global chemical market and contributes around 7% of GDP. To achieve the ambition of capturing 5–6% of the global chemical value chain by 2030 and 10% by 2040, he noted that India would need to sustain a growth rate of 13–14% annually, a significant acceleration from its historical rate of approximately 10%. Mr. Patra further mentioned that India's per capita consumption of chemicals remains nearly one-tenth of China's level, underscoring the substantial headroom for domestic market growth. To enable this acceleration, Mr. Patra argued for policy enablers such as a single-window compliance and approval system, a unified and credible industry voice in policy dialogue, and a focused effort to build success stories in a small number of high-potential sectors as proof of concept for broader scale-up. Mr. Patra's quantitative and strategic insights underscore that India's ambitions in the chemical sector are not only an industrial aspiration, but also a governance and coordination challenge, requiring streamlined policy mechanisms and a cohesive industry front to translate growth potential into measurable outcomes.

Mr. Shikhar Jain (Principal Counselor, CII-ITC Centre for Sustainable Development):

Mr. Jain offered the perspective of Indian industry associations, particularly with regard to sustainability and standards. He noted that while India is scaling up production, it must simultaneously raise its regulatory and quality standards. He discussed the government's increasing use of Quality Control Orders (QCOs), which are mandatory standards for chemical products, as a means to prevent substandard imports and promote local manufacturing of higher-quality goods. He welcomed this approach, observing that "targeted yet effective quality control orders can lift the floor without overburdening MSMEs." In his view, smart regulation can actually stimulate industry by eliminating low-quality products and building trust in "Made in India" chemicals.

At the same time, Mr. Jain cautioned against compliance becoming mere paperwork. He echoed the need for digital compliance systems and data transparency. For instance, he suggested developing shared resources such as classification databases, templates, and help desks to assist companies, especially MSMEs, comply with regulations, essentially creating "basic shared infrastructure" for regulatory compliance.

Mr. Jain also underlined the role of sustainability, noting that global buyers increasingly demand proof of safe and environmentally responsible manufacturing. Therefore, Indian companies, should adopt global benchmarks, such as Responsible Care or ISO environmental standards, to remain competitive. Quoting the session theme, Mr. Jain stated that compliance metrics should drive decisions, not paperwork, meaning that regulators and the industry should focus on outcomes, such as safer products and pollution prevention, rather than on bureaucratic processes. Overall, Mr. Jain's presentation highlighted that policy alignment, capacity building, and sustainability are essential for truly enabling the "Make in India" initiative in the chemical sector.

Mr. Ramkumar Shankar (Managing Director, Sanmar Group):

Speaking from the perspective of a major domestic chemical manufacturer, Mr. Shankar reinforced many of the earlier points with practical insights. He noted that India's goal of increasing its share of the global chemical industry will require more than just expanding capacity; it will also require ensuring world-class safety and compliance in all new and existing facilities. Drawing on his experience, he remarked that "India will grow. It's a no-brainer that we must ensure this growth does not become a roadblock [due to compliance issues]". In the panel, he shared that one of the lessons learned from the past is the cost of accidents and environmental incidents – they not only harm people and the environment, but also set back the industry's credibility.

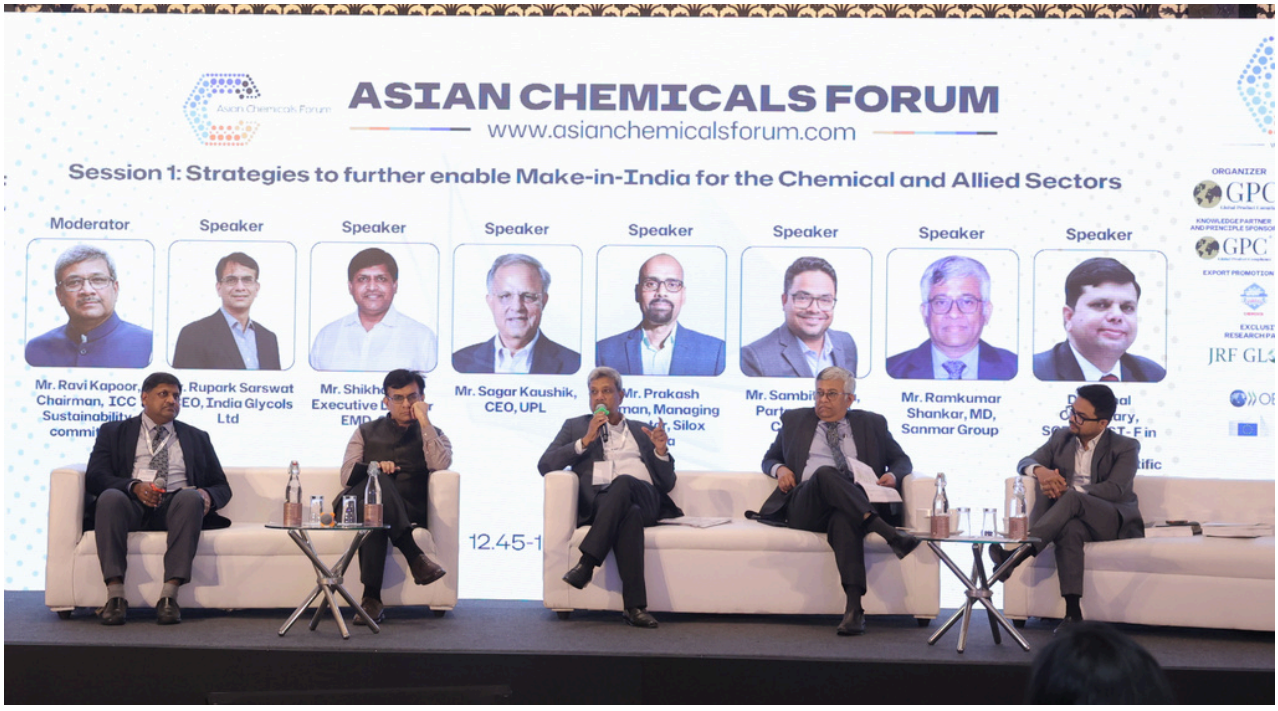
Mr. Shankar recalled how a discussion about industrial accidents in the inaugural session prompted him to look up some data, which served to show "how important this is" for the industry's future. He advocated for an industry-wide culture of "zero tolerance" for safety lapses. This includes investing in better process safety technologies, rigorous training, and emergency preparedness.

Mr. Shankar also addressed regulatory engagement, praising the growing dialogue between the industry and the government. He indicated that forums like ACF help align on forthcoming regulations, such as India's draft Chemical Management Rules. He urged industry leaders not to view compliance as a cost but as an investment. Staying ahead of regulations can prevent disruptions such as product bans or recalls down the line. Finally, Mr. Shankar mentioned the importance of infrastructure, including hard infrastructure, such as common effluent treatment plants, and soft infrastructure, such as accredited labs and certification bodies in India, to support compliance. Strengthening these would make it easier for companies to comply and prove compliance. Mr. Shankar's contributions grounded the discussion in the realities faced by Indian chemical companies and the steps needed to safely scale up.

Mr. Rupak Sarswat (Chief Executive Officer, India Glycols Limited):

As the CEO of a prominent Indian chemical firm, Mr. Sarswat spoke candidly about the challenges and opportunities from an operational standpoint. Encouraged by the moderator to speak frankly (as there were no regulators on the panel), he did not shy away from identifying pain points. Mr. Sarswat emphasized that, although policies such as Quality Control Orders and the "Make in India" initiatives are well-intentioned, execution is key. Mr. Sarswat highlighted areas where companies face hurdles, such as lengthy environmental clearance processes for plant expansion, inconsistent enforcement across states, and infrastructure bottlenecks in industrial estates. According to Mr. Sarswat, addressing these issues requires joint efforts in the form of public-private partnerships. He cited a successful example: his company's work with local authorities to set up a safety training center for chemical transporters, which improved compliance in logistics.

Regarding opportunities, Mr. Sarswat was optimistic. He noted that Indian companies, including many SMEs, are increasingly globally ambitious yet compliance-conscious. Many have begun adopting voluntary standards and auditing their supply chains in anticipation of stricter rules. He offered the perspective that the agility and innovation of the Indian industry can be leveraged – for instance, by developing greener chemical processes – to leapfrog into the global market. "In our company's journey, every time we invested in a cleaner technology or a safer process, it paid off in the long run," he said, illustrating that compliance and profitability can go hand in hand. Mr. Sarswat also mentioned the importance of open dialogue, praising the ACF for enabling industry to voice concerns and recommendations directly to policymakers. In conclusion, he reiterated that India can become both a manufacturing powerhouse and a model for chemical safety if the government and the industry continue to collaborate in good faith.



Session 2A:
GHS Implementation and the Impact on Asian Industries

About the Session

This session, held on Day 2, centered on the Globally Harmonized System (GHS) of Classification and Labelling of Chemicals, specifically addressing how its implementation (or lack thereof) is affecting Asian industries. Moderated by Mr. Oliver Wootton, Senior Programme Specialist at the United Nations Institute for Training and Research (UNITAR), the panel brought together experts from international agencies, the industry, and national regulators to share experiences and chart the path forward for GHS adoption in Asia. The moderator, Mr. Oliver Wootton, began with the strong statement that "GHS is the true backbone of chemicals management, and its importance cannot be underlined enough." He noted that, over the two days of the forum, GHS had repeatedly been identified as a foundational element – for instance by Mr. Bob Diderich of the OECD, who identified GHS as one of the fundamental building blocks for sound chemicals regulation.

Mr. Wootton provided a brief global status update. As of 2025, 76 countries have implemented the GHS in some form via legislation. However, many others (including several regions in Asia) are still in progress or have only partial implementation. A new global target (Target B6 under the post-2020 global chemicals framework) calls for "all governments to implement GHS in all relevant sectors by 2030". This target adds urgency for countries like India, which are marked in red on UNITAR's GHS tracking map, indicating that they have no GHS-based regulations fully in force yet. Mr. Wootton highlighted that implementing GHS is not merely a regulatory exercise but rather that it has cross-sector benefits . It improves workplace safety, facilitates trade through common labels and safety data sheet formats, and underpins other chemical regulations such as risk assessment and supply chain communication. He mentioned that the GHS is now referenced as the international standard in various contexts. For example, the Food and Agriculture Organization of the United Nations (FAO) regards the GHS as the standard for pesticide labelling, and the International Labour Organization (ILO) links the GHS to occupational safety standards. Against this backdrop, the panelists each shared insights from their respective fields.

Mr. Oliver Wootton (Senior program officer , UNITAR) :

Mr. Wootton outlined UNITAR's role in helping countries adopt the GHS by providing capacity-building and training. Mr. Wootton emphasized the importance of capacity building, noting that many developing countries need technical and legislative assistance to draft GHS regulations and train stakeholders. He mentioned that UNITAR, in partnership with organizations such as the OECD and SAICM, has been working on guidance documents and pilot projects in Asia and Africa. A key point he made was the concept of "building blocks" within the GHS – countries can pick which hazard classes and categories to implement. While this flexibility is useful, it can also lead to inconsistencies. He noted that the global framework's wording, "as appropriate for national circumstances" acknowledges this. However, he encouraged countries to implement the framework as fully as possible to maximize harmonization.

Mr. Wootton also shared his observations on the role of industry. He said that many multinational companies operating in Asia already use GHS classifications and labels, even in countries without GHS laws, because it is part of their global policy. This is a positive trend because it raises the bar and familiarizes supply chains with GHS. However, SMEs often lag behind and need support. He reiterated a memorable quote from earlier: "GHS has become the international standard... and all states should fully implement GHS as a matter of urgency". In an ILO context,, this quote underscored his message that Asia's rapidly growing chemical sector must not delay GHS adoption if it wants to integrate smoothly into global trade and ensure safety. Throughout the session, Mr. Wootton interwove these points and facilitated the panel, often highlighting specific examples from different countries. He congratulated Vietnam for its recent GHS implementation and noted the challenges in countries like Indonesia and India still face.

Ms. Agnes Lau (Director of Product Safety Asia Pacific, BASF):

Speaking as someone responsible for regulatory compliance across multiple Asian jurisdictions, Ms. Lau shared an industry perspective. She described the complexity of dealing with a patchwork of GHS implementations in the Asia-Pacific region. The BASF operates in nearly all major Asian economies, each of which may be at a different stage. Some have implemented the GHS via local standards, but perhaps with different revised editions of the Purple Book. Others have no GHS regulations yet. Still others apply GHS only to certain sectors, such as industrial chemicals but not consumer products. This creates a significant compliance burden, as labels and safety data sheets (SDSs) must be tailored to each country. "We have to maintain over 60,000 SDSs in Asia, updated in numerous languages and formats," she noted, illustrating the scale of the task. Greater harmonization would ease this burden considerably.

Ms. Lau highlighted regional collaboration efforts in which the BASF and other companies participate. For example, she mentioned the Asian Harmonization Project, a regulatory cooperation platform where industry and regulators from various countries convene to share best practices on GHS implementation and capacity building. "In yesterday's session I heard a lot about collaboration. I'd like to bring in perspective on the Asian regulatory cooperation platform," she said, referencing this forum for training and information sharing. Through such collaboration, countries can learn from each other. For example, how Malaysia trained its inspectors on GHS, or how Singapore updated its GHS rules to the latest revised edition. Ms. Lau commended these cooperative efforts and suggested that the ACF itself could serve as a springboard for an Asian GHS harmonization roundtable in the future.

Ms. Lau also emphasized the commitment of the industry: The BASF, for instance, doesn't wait for every country's laws to be enacted; they aim to proactively provide GHS-compliant SDSs and labels because it's part of their product stewardship. She mentioned that this often involves educating downstream customers who might not be familiar with the new pictograms or hazard statements. To keep everyone "on the same page", the BASF provides training to its distributors and customers whenever a country transitions to GHS. In her concluding remarks, Ms. Lau expressed optimism that, through continued partnerships between regulators (many of whom were in the room) and industry, Asia could accelerate GHS adoption. She belives that the benefits – improved safety and smoother trade – outweigh the initial adjustment costs.

Ms. Nadira Binti Mohamad (Assistant Director, Department of Occupational Safety & Health, Malaysia):

Ms. Mohamad presented a case study on Malaysia's GHS implementation. Malaysia introduced the GHS under its Occupational Safety and Health (Chemical Classification and Hazard Communication) Regulations in 2013, becoming one of the earliest adopters in Asia. Ms. Mohamad described the journey and its impact over the last decade. Her role involved providing technical guidance to the industry and managing Malaysia's hazardous chemical inventory system. She shared that Malaysia's phased approach – first mandating GHS classification and labelling for substances, then for mixtures – helped the industry adapt gradually. One key to success was extensive stakeholder engagement: "We provided technical guidance, facilitated industry compliance and managed the national chemical inventory." By maintaining an inventory - essentially a database where companies notify authorities of their chemicals and classifications -allowed the regulator to monitor compliance and provide feedback on any inaccurate classifications.

Ms. Mohamad noted some challenges faced: initially, smaller companies struggled with the complexity of classification criteria, so the government arranged training sessions and even published a "GHS Classification Guidance" in the local language. Over time, compliance improved. She pointed out one positive outcome: Malaysia's adoption of the GHS system improved the quality of safety data sheets (SDS) in the market. Before GHS, many SDSs were incomplete or not standardized. Now suppliers had to follow a 16-section format with specific information, which benefits end users. She also mentioned that Malaysia's adoption of GHS has made it easier for Malaysian products to be exported because their labels are internationally recognized.

When asked about enforcement, Ms. Mohamad explained that in the first few years, Malaysia focused on raising awareness and took a light-touch enforcement stance, issuing reminders and corrective orders rather than immediate penalties. This approach built trust and encouraged voluntary compliance. Today, however, enforcement is stricter, as the industry has had time to adjust. She recommended this approach to other countries: educate first, then enforce. In conclusion, Ms. Mohamad was proud to report that Malaysia is considered a regional leader on GHS and is ready to assist neighboring countries. For example, DOSH Malaysia has shared its experiences with the Indonesian and Philippine authorities as they draft their regulations. Her insights demonstrated that with government commitment and industry cooperation, the GHS can be effectively implemented even in developing economies.

Mr. Chintan Joshi (Head – Advocacy & Compliance, Tata Chemicals):

Mr. Joshi offered insights from the Indian industry perspective, particularly valuable as India is still preparing its GHS-based rules through the upcoming Chemical (Management and Safety) Rules. He acknowledged that India is one of the major economies yet to formally adopt the GHS, which poses challenges for companies like Tata Chemicals that operates globally. Mr. Joshi noted that Tata Chemicals has already internally implemented GHS classification and labelling for its products in anticipation of the change. "We don't want to be caught unprepared. Our teams have been updating safety data sheets and labels to align with GHS, even though the national regulation isn't in force yet," he said. This proactive approach ensures a smooth transition once the rules take effect and is also necessary because Tata sells products in countries that require GHS compliance.

Mr. Joshi highlighted a key advocacy issue: the Indian government's draft rules on chemical management include GHS. Industry bodies such as the Confederation of Indian Industry (CII) and and the Indian Chemical Council (ICC), where he contributes, have been giving feedback to make the rules practical. One suggestion, for example, was to establish a centralized classification database (perhaps maintained by the government or an industry consortium) so that companies can refer to agreed-upon classifications for common substances, ensuring consistency across the sector. Mr. Joshi explained that inconsistent classifications can be a nightmare – if two suppliers label the same chemical differently for example, it creates confusion. A centralized repository would help avoid that, as has been done in some jurisdictions.

Another aspect Mr. Joshi touched on was training and infrastructure. India will require additional certified toxicologists and laboratories to perform classifications, such as acute toxicity tests and to verify safety data sheet contents. He reiterated the earlier memorandum of understanding (MoU) announcement that partnerships with universities will be essential in developing the necessary talent. He was optimistic that the immediate impact on industry will be positive once India fully implements GHS. Indian manufacturers will find it easier to do business abroad, domestic worker safety information will improve, and chemical accidents could be reduced due to better hazard communication. He concluded by stating that the Indian industry is largely supportive of GHS adoption; their main request is for clear guidelines and a reasonable timeline for compliance. With that, they are ready to "hit the ground running," leveraging the experience of peers such as Malaysia and the Philippines.

Session 2B:
Global Regulatory Developments – the Impact on Asian Industries

About the Session

This session examined global regulatory trends in chemicals management and their impact on Asian chemical industries. Dr. Sudha Kannan (VP of Intellectual Property & Compliance at the Aditya Birla Group) moderated the session, which featured a diverse set of panelists from industry, regulatory consulting, and international associations. Dr. Kannan began by noting the rapid evolution of the global chemical regulatory landscape, citing the EU's Green Deal and Chemicals Strategy for Sustainability, new trade agreements embedding chemical safety clauses, and emerging regulations in China and other economies as examples. She emphasized that Asian companies must stay ahead of these developments or risk facing market access issues and compliance challenges. "Why should industry leaders pay attention now?" she prompted, setting the stage for the discussion. The panelists then addressed topics such as new chemical registration regimes, tightening controls on hazardous substances, sustainability regulations, and the need for alignment and harmonization of standards.

Mr. Shisher Kumra (Executive Director, Global Product Compliance Group):

Mr. Kumra delivered a detailed presentation focusing on the challenges posed by emerging global regulatory frameworks and their direct implications for Asian exporters. Drawing on his extensive experience in chemical regulatory policy, he emphasized that technical barriers to trade (TBTs) are becoming increasingly complex, especially under the EU's REACH regulation and related mechanisms such as Substances of Concern in Articles (SCIP). He pointed out that many Asian manufacturers have difficulty demonstrating compliance due to fragmented domestic systems and limited conformity-assessment capacity. Mr. Kumra stressed that Asia must strengthen its regulatory infrastructure by developing robust standards, testing, and quality control mechanisms that meet global expectations. He cited India's expanding use of Quality Control Orders (QCOs) as a positive step that protects local consumers and encourages domestic industries to improve product quality to compete internationally.

Mr. Kumra also highlighted the importance of international alignment, noting India's ongoing efforts to harmonize BIS standards with ISO norms and the potential benefits of mutual recognition agreements (MRAs) for testing and certification. He explained that such cooperation could reduce duplication of costs and accelerate market access for SMEs. He shared best-practice examples and referred to Korean government models where centrally generated test data supports small enterprises, suggesting that India could adopt similar mechanisms. In closing, Mr. Kumra urged industries to monitor evolving global trends, such as new restrictions on microplastics and risk evaluations under the U.S. TSCA, while upgrading their internal compliance systems. He reminded the audience that in an era of rapid regulatory change, compliance is a moving target internationally—standing still is not an option.

Mr. Anupam Kaul (Chair, Executive Committee, RRMA):

Mr. Kaul provided insights as a consultant who works with companies on global compliance. He focused on the domino effect of regulatory changes. For instance, he explained how the EU's evolving chemical policies, such as the goal of the EU Green Deal for a toxic-free environment, influence regulations in other regions and also corporate policies worldwide, not just in the EI. He noted that when the EU bans or restricts a chemical, multinational companies often apply those standards globally to simplify operations. This forces suppliers in Asia to follow suit. "European regulations have a way of becoming de facto global regulations for supply chains," Mr. Kaul noted. He gave the example of the EU's impending ban on certain brominated flame retardants. Asian electronics manufacturers are reformulating their products now to comply with these regulations if they want access to the EU market. This change is also being adopted for products sold in other markets.

Mr. Kaul also discussed new bilateral trade agreements that include cooperation on chemical regulations. He mentioned that agreements like the EU-Vietnam Free Trade Agreement (FTA) or the united States-Mexico-Canada Agreement (USMCA) have chapters on improving regulatory cooperation or environmental standards. This indicates that trade partners are concerned about chemical management practices. Asian exporters should be aware that such trade pacts could eventually pressure local regulators to tighten standards in line with those of their partners. For example, he speculated that if India pursues an FTA with the EU, compliance with EU chemical regulations could be a topic of negotiation.

To manage these trends, Mr. Kaul recommended that companies invest in regulatory intelligence, which essentially involves monitoring services or in-house teams that track global laws. He noted that some large companies subscribe to databases that track regulatory proposals in key markets. This allows them to proactively adjust to upcoming rules. He suggested that SMEs pool their resources through industry associations to accomplish something similar.

Additionally, he emphasized the importance of sustainability reporting. Global investors now require companies to disclose chemical safety and environmental metrics, such as how they handle hazardous waste, or reduce SVHCs in products. Asian companies seeking international capital or customers will need to improve in this area by linking to global frameworks such as the Task Force on Climate-related Financial Disclosures (TCFD) or the Global Reporting Initiative (GRI), which increasingly include information on pollution and chemicals. Mr. Kaul's overarching point was that global regulatory trends are not abstract; they affect the bottom line if not anticipated. Therefore, businesses must broaden their view beyond domestic laws.

Mr. Albert Samuela (Marketing & Innovation Lead, Nalco Water, an Ecolab Company; Vice President, Philippine Chemical Industry Association):

Mr. Albert Samuela offered a dual perspective as both manager of a multinational company and a leader of an industry association in Southeast Asia. He highlighted regional initiatives in the Asia-Pacific in response to global trends. For example, he talked about the ASEAN Chemical Industries Council's work on an ASEAN Regulatory Cooperation Project. One aim of that project is to eventually create an ASEAN-wide chemical inventory or even a mutual agreement on chemical notifications. Harmonizing basic chemical regulatory requirements among ASEAN countries would help local industries compete better globally by simplifying compliance within the region. Mr. Samuela noted that this idea was partly inspired by the EU's single market approach. While ASEAN is far from that level of integration, it is moving in the direction of greater cooperation.

From a corporate perspective, Mr. Samuela emphasized innovation driven by regulation. At Nalco Water, the Ecolab division where he works, many new products are developed specifically to meet customers' regulatory needs. For instance, they developed a water treatment chemical that is free of certain biocides that are now restricted. He stated that their R&D portfolio is increasingly guided by forecasting which chemicals might be banned within the next 5–10 years, so they can have alternatives ready when needed. This illustrates the direct impact of global regulatory trends on business strategy. "We treat global regulatory changes as opportunities for innovation," he said, referencing how a ban in one area allowed them to introduce a new, safer product and capture market share early on.

Mr. Samuela also spoke about the need for skilled professionals, echoing earlier MoU discussions. He mentioned that they launched a certification program for "Regulatory Affairs Specialists" in the Philippines under the local chemical association to raise competency levels across companies. During the Q&A session, someone asked him about the readiness of smaller ASEAN countries for systems like EU REACH. He responded that it's a long journey, but even smaller countries like Cambodia or Laos are starting to engage via ASEAN forums so as not to be left behind. In conclusion, Mr. Samuela expressed optimism, believing that Asian industries are increasingly aware that "compliance is part of competitiveness". As long as they stay collaborative (through associations) and remain forward-looking, they can adapt to global changes rather than become victims of them.

Dr. Abhay Deshpande (Global Innovation & Strategy Lead, JRF Global):

Dr. Deshpande presented from the perspectives of scientific research and regulatory science. With over 40 years of experience in regulatory research, he addressed how global regulatory expectations are raising the bar for scientific data requirements. He mentioned that regulatory agencies worldwide are demanding more robust data on chemical safety. For example, Europe is pushing for endocrine disruptor testing, and more complex environmental fate models are required for new chemicals. Asian companies registering chemicals in markets like the EU or US must now meet these higher data requirements, which can be challenging.

Dr. Deshpande highlighted that organizations like JRF, a contract research lab, are preparing to provide such advanced testing and study services. However, he also suggested public-private partnerships to develop high-end toxicology and ecotoxicology research capacity in Asia.. "Innovation in how we test and assess chemicals will be crucial", he noted, mentioning the rise of alternative testing methods, such as in-vitro and in-silico models, which regulators are slowly accepting. Asia should invest in these modern methodologies to stay at the forefront.

Dr. Deshpande also addressed the following question: "How do new regulatory initiatives address current challenges, and why should industry leaders pay attention now?" In his reply, he stressed that many global regulatory developments, such as comprehensive chemical inventories, safety data transparency, and risk management programs, are responses to past failures – including industrial accidents, public health discoveries, or pollution crises. Dr. Deshpande used India's upcoming regulations as an example, explaining how they learned from incidents like the 2020 Vishakhapatnam gas leak and from other countries' experiences. These regulations place more responsibility on companies to maintain safety data and emergency plans. He argued that industry leaders should pay attention because compliance is increasingly tied to business continuity. A company that violates regulations not only faces fines but can be shut out of markets or suffer reputational damage that is difficult to recover from. "Regulatory compliance is becoming a C-suite issue, not just a technical issue", Dr. Deshpande observed, indicating that CEOs and board members worldwide now discuss regulatory risks in the same breath as financial or operational risks.

Finally, Dr. Deshpande encouraged building a culture of compliance and sustainability within organizations. He said that if top management stays informed about global regulatory trends and establishes proactive policies, such as phasing out certain chemicals ahead of time, or investing in safer process innovation, then the company will be prepared for future rules. He ended on an encouraging note that Asia has the scientific talent and ingenuity to meet global regulatory challenges as long as there is support and awareness at the highest levels of industry and government.

Ms. Nadira Binti Mohamad (Assistant Director, Department of Occupational Safety & Health, Malaysia):

Ms. Mohamad participated in session 2B as well, offering the perspective of a Southeast Asian regulator on global developments. She noted that Asian regulators are communicating more through networks such as the ASEAN-OSHNET, which focuses on occupational safety and health, and ASEAN working groups on chemicals. These networks help them respond collectively to matters such as new listings under international conventions (Stockholm, Rotterdam, Minamata, etc.).

For instance, when certain flame retardants were listed in the Stockholm Convention, ASEAN regulators discussed coordinating their approach so enforcement could be somewhat harmonized. Ms. Mohamad's main message was that global treaties and agreements heavily influence national regulations. Malaysia and other countries systematically update their domestic laws to comply with international convention obligations, such as banning POPs and mercury-added products. Therefore, industries should track not only national laws but also decisions made at global conventions because these decisions signal future domestic regulations.

Ms. Mohamad also discussed how Malaysia and some neighboring countries engage with EU and US authorities through bilateral dialogues. These dialogues sometimes alert them about upcoming foreign regulations that could affect their exports. For example, Malaysian palm oil exporters are closely watching the EU's regulations on contaminants and are working to ensure compliance with government help. Ms. Mohamad underscored that no country operates in isolation anymore. Even if an Asian country's laws are lax in some areas, global market demands will force local companies to adhere to higher standards or lose business. Thus, regulators also feel pressure to avoid their country becoming a "pollution haven" or facing trade barriers, they are gradually tightening regulations in line with global norms.

In conclusion, Ms. Mohamad reiterated that collaboration is paramount – within government departments (since chemical management touches health, environment, industry, etc.), among countries, and between the public and private sectors. She expressed that forums like the ACF help regulators understand the global pressures that industries face, which in turn can Facilitate balanced policymaking. She assured that regulators are not trying to make life difficult for the industry but rather ensure sustainable growth. Global developments provide Asian regulators with both cautionary tales and best practices to help them craft effective regulations. Ms. Mohamad's contribution rounded out the panel by reinforcing that regulators are very much part of the global dialogue and are open to engaging with the industry to navigate changes together.

Session 3A:
Targets and Indicators for Chemicals

About the Session

This session examined how companies can use compliance metrics to improve performance and decision-making, rather than just to satisfy reporting requirements. The discussion was moderated by Dr. Jitendra Sharma, Programme Management Officer of the UNEP Chemicals and Waste Management Programme. He opened by stating that "many firms track dozens of metrics that do not influence outcomes," turning compliance into a box-ticking exercise. He emphasized that the goal should be to define a "concise set of KPIs that link to buyer confidence, access to finance, and operational performance". In other words, compliance data should be treated as business signals that can drive improvement and trust. For example, metrics on chemical safety could affect a buyer's willingness to source from a company or an investor's credit decision. Dr. Sharma noted that the session would discuss how to design a "minimum viable data set" for compliance, reduce reporting clutter, and ensure that each indicator has an owner, a regular review cadence, and clear consequences for non-performance. The panel featured experts from academia, NGOs, and industry who each tackled different facets of this issue.

Dr. Xenia Trier (Associate Professor, University of Copenhagen, Denmark):

Dr. Trier, an analytical chemist with over 25 years of experience in EU chemicals regulation, discussed the importance of meaningful indicators to avoid "regrettable substitutions" and other unintended outcomes. Drawing from her experience in developing indicator frameworks for chemical strategy in the EU, she argued that companies should measure not only what is immediately required by law, but also metrics that anticipate future regulatory and market expectations. As an example, Dr. Trier mentioned the case of PFAS (per- and polyfluoroalkyl substances) substitution. She noted that if a company only tracks the specific PFAS chemicals that are currently banned, it may substitute them with other PFAS analogues and find that those are regulated as well (a regrettable substitution scenario). Instead, she suggested a "safe strategy" in which companies monitor the broader family of related chemicals and include these parameters in their compliance documentation. "Think beyond the one chemical that's outlawed. Measure the larger family. Put this in your documentation," she advised, implying that this proactive approach will save companies from future headaches.

Dr. Trier also highlighted the need for ownership and actionability in metrics. Each compliance indicator should have a clear owner within the organization and a defined response plan. For instance, if a KPI is "percentage of safety data sheets updated to GHS Revision 9", there should be a manager accountable, a schedule (cadence) for reviewing progress, and a consequence (such as escalation or halting shipments) if the target is not met. She shared success stories from Europe where simplifying metrics and assigning accountability led to tangible improvements in safety performance and efficiency. Her key quote, "Indicators should drive decisions, not paperwork", neatly encapsulated the session's theme and served as a call to streamline compliance tracking to focus on what truly matters.

Mr. Satish Sinha (Associate Director, Toxics Link):

Mr. Sinha offered the perspective of an environmental non-governmental organization (NGO) focused on chemicals management. Having worked for decades on policy advocacy and grassroots initiatives in waste management and pollution prevention, he emphasized that good indicators can drive policy change and raise public awareness. He pointed out that in many cases, industry and regulators have been collecting data that is never utilized effectively. For example, he noted that thousands of reports are filed under various rules, such as hazardous waste returns and emission reports, but the data often remains unused. He argued for aggregating and publicizing key compliance indicators to create pressure and incentives for improvement.

As an example, Mr. Sinha referenced the issue of toxic releases. “In Japan and the US, simply making data public had a significant impact – companies reduced emissions when communities could see the numbers”, he said. This remark aligns with evidence showing that public disclosure of data, such as the U.S. Toxics Release Inventory (TRI), prompted companies to voluntarily cut emissions. By citing this example, Mr. Sinha underscored how transparency can make compliance metrics a driver of environmental improvement. This example refers to U.S. TRI data showing that 11% of companies reported reducing hazardous emissions because of substitution efforts after TRI figures were published.

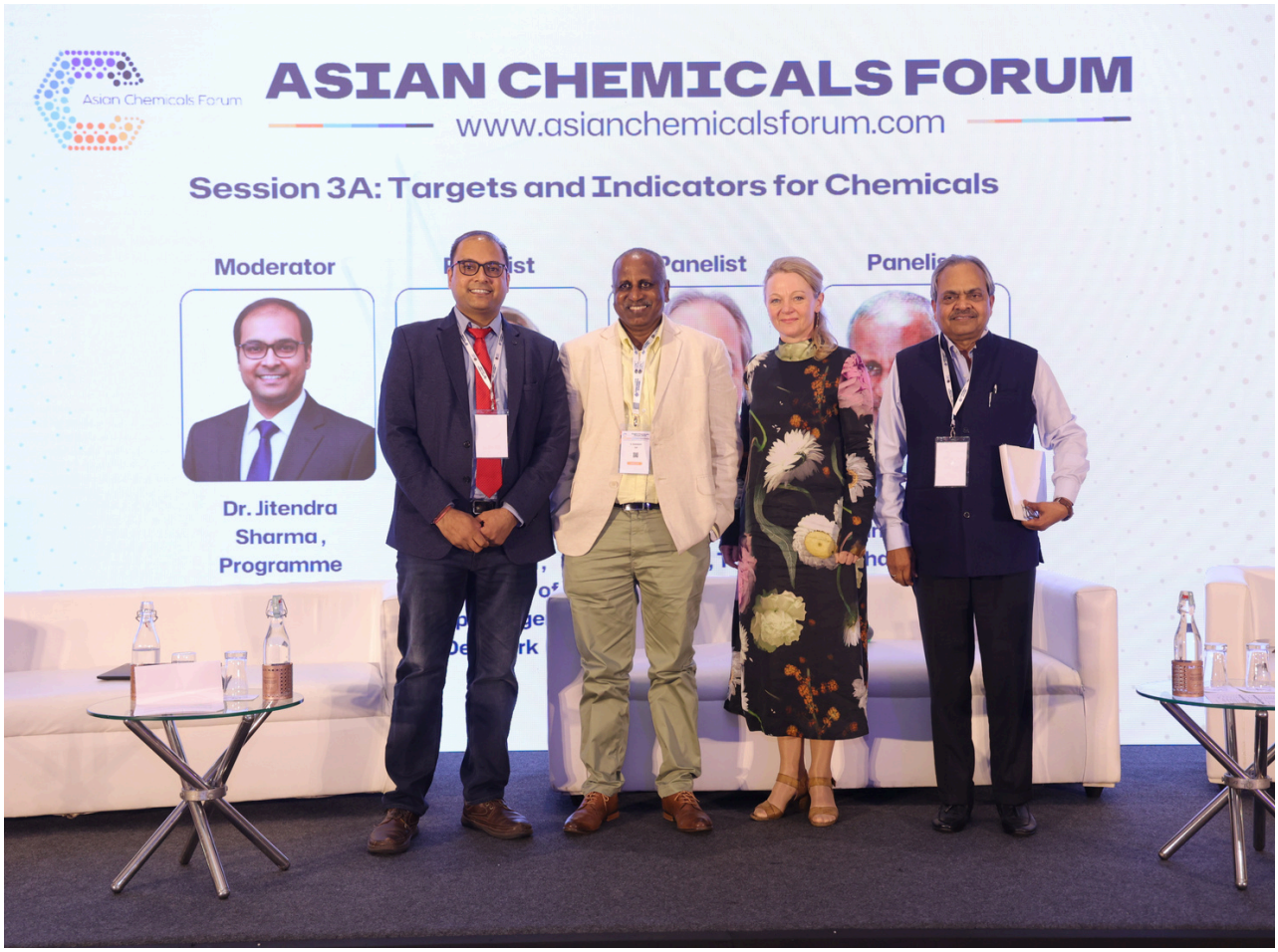
Furthermore, Mr. Sinha advocated for capacity building so that even small- and medium-sized enterprises (SMEs) can track meaningful metrics. He suggested creating simple toolkits, perhaps via industry associations or NGOs, to help SMEs identify five to ten core indicators relevant to their operation, such as chemical storage incidents, training hours on safety, or the percentage of inputs with safer alternatives assessed. These could serve as a “minimum compliance dashboard” for an SME. In his view, policymakers should also shift to outcome-based inspections, rewarding firms that show good indicators over time. In conclusion, Mr. Sinha’s contribution highlighted that, when chosen wisely and used transparently, compliance indicators improve internal management, and they can also build public trust and drive broader change in the industry.

Mr. Ganesan Shunmugam (Head of Regulatory Affairs, UPL Chemicals; Chairman of the Indian Chemical Council Treaties Expert Committee):

Mr. Shunmugam offered a historically grounded perspective on global chemical governance frameworks, drawing parallels between past international commitments and the current Global Framework on Chemicals. He reminded the audience that the objectives now embedded in the GFC's 28 targets are not new, tracing them directly to Agenda 21 agreed at the Rio Earth Summit in 1992, which had already called for expanding international chemical risk assessment, harmonisation of classification and labelling, information exchange on toxic substances, and strengthening of national management capacities. Mr. Shunmugam noted that similar commitments were repeated under the World Summit on Sustainable Development in 2002, then again under SAICM in 2006, with limited delivery each time.

Mr. Shunmugam placed India's position in global context, observing that the global chemical industry is valued at approximately USD 7 trillion, of which India's share stands at only around 3% despite being the world's fourth largest economy. Mr. Shunmugam stressed that for frameworks like the GFC to succeed where predecessors have not, their implementation must be made genuinely relevant to the circumstances of the Global South, citing Principle 11 of the Rio Declaration, which cautions that standards applied in some countries may be inappropriate and economically unwarranted for others, particularly developing nations.

Mr. Shunmugam concluded with a candid warning that the GFC risks the same fate as its predecessors – the Rio Declaration, WSSD, and SAICM – all of which were voluntary in nature and fell short of their stated goals. In his view, success depends on making the benefits of compliance visible and tangible to all stakeholders. "The moment anyone sees benefit in compliance," he said, "everything else will follow."



Session 3B:
Substitution of Chemicals of Concern – Practical Approaches for Replacing PFAS

About the Session

The last session addressed the challenge of hazardous chemicals substitution, focusing on PFAS (commonly referred to as forever chemicals) and exploring how governments and the industry can collaborate to replace high-risk substances with safer alternatives. Moderated by Dr. Eeva Leinala, Principal Administrator of the OECD Environment Directorate, the session opened with her clear framing of why PFAS substitution has become one of the most urgent priorities in global chemicals management. Drawing on OECD experience, she emphasized that substitution is not only a regulatory or scientific exercise but a practical implementation challenge, requiring better data, coordination across sectors, and careful assessment to avoid regrettable substitutions," where one hazardous chemical is replaced with another equally harmful option. Building on this foundation, the session expanded on the prior discussions by addressing a specific and pressing compliance issue. Many countries are moving to restrict or ban PFAS and other persistent toxic substances, forcing companies to navigate this transition. Panelists from Europe, Asia, and civil society discussed strategies to avoid regrettable substitutions and to accelerate innovation in safer chemicals.

Dr. Xenia Trier (Associate Professor, University of Copenhagen, Denmark):

Building on her earlier input about indicators, Dr. Trier offered a scientific perspective on PFAS and chemical substitution in this panel. She explained why PFAS pose a unique challenge: their extreme persistence and links to health issues have prompted regulators worldwide to consider comprehensive bans. Dr. Trier highlighted that Europe is moving toward a broad restriction on thousands of PFAS, and the US EPA is tightening its rules as well. Given this global context, Asian manufacturers who might supply to global markets or use PFAS in their products need to act quickly. She advised companies to invest in R&D for PFAS alternatives now rather than waiting for regulations to force their hand. Importantly, Dr. Trier warned against one-for-one substitution without thorough evaluation.

Echoing her earlier point, Dr. Trier said that companies should avoid replacing a banned PFAS with a similar compound that could be "next on the list." She cited the example of some EU firms that expanded their hazard monitoring to a broader set of PFAS and collaborated on an EU project for safer surfactants as a positive one. "A strategy where you measure not only the PFAS you want to avoid, but the larger family, is a safe strategy," she reiterated. Dr. Trier also described tools such as chemical alternative assessment frameworks that help companies choose genuinely safer substitutes by considering factors such as biodegradability and toxicity. She encouraged Asian academic and industry partnerships to develop local solutions, such as PFAS in textiles or fire-fighting foams with innovative materials that have been tested for safety. Her overarching message was that proactive substitution is both a compliance necessity and an opportunity for innovation. Companies that lead in offering safer PFAS-free products could gain a competitive advantage as global regulations tighten.

Dr. Koki Takaki (Director, Environmental Health Department, Japan):

Dr. Takaki offered the perspective of a government regulator on facilitating chemical substitutions. Based on Japan's experience under its Chemical Substances Control Law and international commitments, he outlined three key ways in which the Japanese government supports industry in phasing out hazardous substances like PFAS,

First and foremost, clear regulations drive substitution. "The government could support this process by regulating hazardous substances and obliging the industry to substitute such substances for safer ones", said Dr. Takaki. Japan, for example, has listed certain PFAS as priority substances and even banned specific uses, effectively forcing companies to find alternatives. He noted that simply designating a chemical as a "Priority Chemical" for further assessment sends a strong signal to the industry to start looking for substitutes, even before a ban. This approach of flagging substances of concern early gives companies time to plan and avoid being caught off guard.

Dr. Takaki emphasized the power of transparency. He highlighted Japan's implementation of a Pollutant Release and Transfer Register (PRTR) system, similar to those in the US and Europe. Under Japan's PRTR, companies must report emissions and transfers of certain hazardous substances, and this data is made public. "By putting substances on that list, it gives industry a strong message for the need to consider substitution," he observed. Public disclosure creates reputational incentives. He reinforced this point by referencing an earlier example. In the US, after PRTR data (the TRI system) was published, 11% of companies reported reducing emissions by substituting hazardous substances. Dr. Takaki's point was that when companies know that regulators and the public are monitoring specific chemicals, they are more likely to proactively eliminate them.

Dr. Takaki mentioned that the government also provides technical guidance and sometimes offers financial incentives for green chemistry innovation. Japan's Ministry of Environment has funded R&D projects to find PFAS alternatives in certain applications and has created platforms for information exchange on safer substitutes. He suggested that governments can facilitate pilot programs and case studies that showcase successful substitutions from which smaller companies can learn.

In summary, Dr. Takaki asserted that combining policy measures with transparency can significantly accelerate the adoption of safer chemicals. His advice can be summed up as "regulate, inform, and support". Even though substitution is largely an industry-driven activity, by doing so, the government sets the direction and helps overcome initial hurdles. His insights resonated with the audience, demonstrating how a collaborative approach can yield environmental benefits while maintaining industrial competitiveness.

Dr. Devendra Patel (Professor (Senior Principal Scientist), The Indian Institute of Toxicology Research, Lucknow):

Dr. Patel brought an analytical chemistry perspective to the session, presenting original monitoring data on PFAS contamination across India and highlighting the urgent need to build domestic testing and awareness capacity. Dr. Patel shared findings from ongoing research in which samples had been collected from locations spanning northern India through to Kolkata, revealing significant PFAS concentrations across multiple environmental matrices. Detected concentrations included approximately 5–7,500 ppt in surface water, around 35,000 ppt in river sediments, 60,000 ppt in industrial soil and sewage treatment plant sludge, 320,000 ppt in aqueous film-forming foam used in firefighting, and approximately 60,100 ppt in food packaging materials.

Dr. Patel expressed particular concern about the latter, noting that packaging used for everyday fast foods, baked goods, and children's meals may be exposing consumers to elevated levels of PFAS, and urged the audience to avoid food wrapped in such materials where possible.

Dr. Patel also discussed his laboratory's work on green chemistry-based extraction methods, which have substantially reduced the volume of toxic solvents required for analysis — from 300–400 millilitres of conventional solvents to as little as 50–200 microlitres — thereby improving both safety and cost-efficiency in environmental monitoring. He noted that direct injection methods have been developed to analyse 40–45 PFAS compounds in a single analytical run from water samples, without requiring sample pre-processing.

Addressing the current state of PFAS analysis in India, Dr. Patel highlighted that only approximately 5–10 laboratories in the country currently possess the capability to detect PFAS at the parts-per-trillion levels required to meet European Union standards. He identified awareness, analytical capacity building, and manufacturing infrastructure for testing consumables as the three most critical priorities for India to manage PFAS contamination effectively

Mr. Satish Sinha (Associate Director, Toxics Link):

Representing the viewpoint of an NGO, Mr. Sinha focused on the urgency and advocacy side of hazardous chemical phase-outs. He congratulated regulators like those in Japan and the EU for taking bold steps regarding PFAS, and urged Indian and other Asian regulators to swiftly follow suit. “There is intense competition from China and others, but we must not lag on safety,” he said, adding that failing to address chemicals like PFAS could hurt exports in the long run if Asia is seen as a dumping ground for unsafe chemicals. Mr. Sinha pointed out that Asian countries have a lot at stake – environmental contamination from PFAS is already being detected, and the cost of inaction, such as cleaning up water, can be enormous.

Mr. Sinha emphasized that the voice of civil society and consumers is crucial. His organization has already raised awareness about PFAS in consumer products, such as cookware, food packaging, and textiles, and he has observed that buyers, especially in Europe, are starting to demand PFAS-free products. “Global regulatory developments, especially in Europe and the US, will inevitably impact Asia,” said Mr. Sinha, “so why not act now?” He advocated a proactive stance: Asian companies should eliminate known problematic substances on their own rather than wait until they are legally forced to do so. This not only protects public health but also positions them as responsible suppliers.

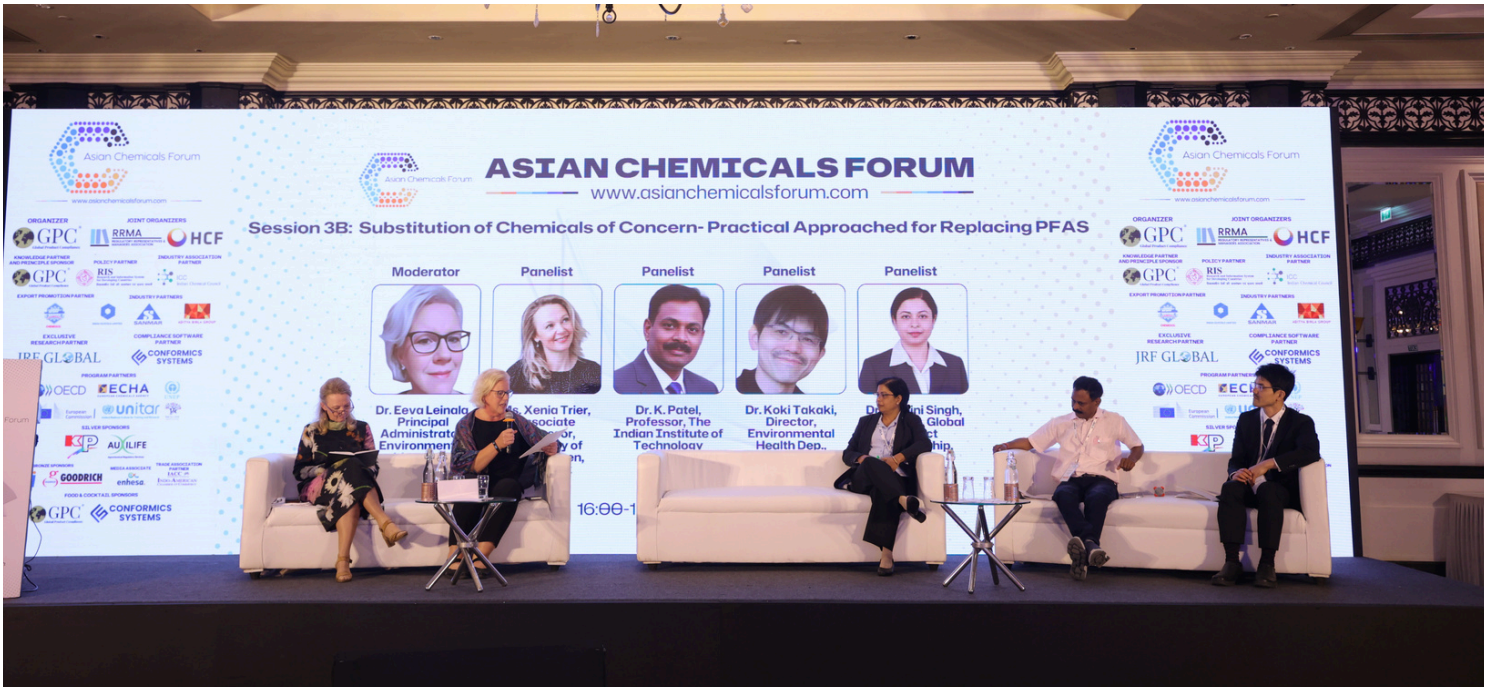
Mr. Sinha also emphasized the role of grassroots monitoring. He gave examples of how NGOs, through independent testing, have revealed high levels of toxic substances in certain products. Such findings often spur regulators to take action. Thus, he encouraged collaboration between NGOs, scientists, and industry to identify problems early on. In conclusion, he called for India and neighboring countries to create a clear roadmap to phase out PFAS and similar persistent chemicals. This roadmap should include timelines and support for the industry transition. His passionate plea reinforced that eliminating “forever chemicals” is a shared responsibility and that delays would only increase costs to society and industry.

Dr. Shalini Singh (Specialist, Global Product Stewardship, Corporate Sustainability, SABIC):

Dr. Singh focused on shifting the industry perspective to see chemical safety as a strategic advantage . She emphasized that her organization does not view the substitution or elimination of Substances of Concern as a "compliance burden," but rather as a significant opportunity to really bring safer materials and products to the market and the consumer. By integrating this mindset, the company aims to turn regulatory requirements into a market advantage.

Dr. Singh outlined a voluntary internal framework known as the "Safe for Chemistry" program, which is used to proactively review both new and legacy substances . She explained that her Product Stewardship team works in close collaboration with the Technical and Innovation (T&I) functions to drive these projects forward. At each stage of a project – from the initial design to later stages – the team utilizes detailed "questionnaires" to evaluate critical attributes of a chemical, including its regulatory status, hazard classification, tonnage, volume, and the specific application it is intended for. This systematic evaluation allows the company to re-evaluate chemicals used in the past to see if they are now subject to new regulations or emerging health concerns .

Addressing the specific challenge of PFAS, Dr. Singh noted that while the company has used these substances in the past, they have transitioned to becoming a "producer of some PFAS-free solutions," such as specific lubricants and resins . She encouraged industry members not to be scared of new regulations, asserting that they often provide solutions and benefits, such as the list of substituted substances available through the ECHA website. In conclusion, she advocated for a “safe and sustainable by design approach”, urging companies to implement long-term strategic plans to manage chemical transitions effectively rather than reacting to laws after they are implemented .



Memorandum of Understanding Signings

In addition to panel discussions, ACF 2025 facilitated key partnerships through Memorandums of Understanding (MoUs), recognizing the importance of collaboration for capacity-building in chemical safety and compliance. Several MoUs were signed during the event between the Regulatory Representatives & Managers Association (RRMA), the Global Product Compliance (GPC) Group, and other institutions. These agreements aim to strengthen regulatory science education, promote the integration of digital tools and technology into compliance processes, and enhance international cooperation in chemicals management. Notably:

- **MoU between RRMA, GPC and the School of Pharmacy & Research at D. Y. Patil University (Pune)** – This partnership focuses on building India's regulatory science talent pipeline. As announced, the parties will work together to develop specialized courses, internships and certification programs in toxicology, regulatory science and safety assessment across various sectors, enabling students and professionals to gain real-world regulatory skills. The parties will also engage in joint research projects and hands-on training to ensure that the next generation of compliance professionals are both technically proficient and globally attuned. This academia–industry–regulator linkage addresses the critical need for more trained experts in chemical regulations, which will support the implementation of initiatives discussed at the forum.
- **MoU between RRMA, GPC and Conformics Systems, Switzerland** – Conformics Systems is a provider of advanced compliance software solutions. This tripartite MoU represents the fusion of regulatory practice and cutting-edge technology. Ms. Roshani Wankhede, Project Manager at Conformics Systems, joined the signing to symbolize this union. The partnership will enable real-time monitoring, automated compliance workflows and predictive regulatory analysis, making regulatory operations faster, more transparent, and interoperable. In practical terms, this means developing or deploying tools, such as the "Intrims" compliance management platform mentioned during the forum, that can help companies track regulations across countries, receive alerts on updates, and manage compliance documents digitally. By leveraging such technology, even small firms can better keep up with complex requirements, a need that was highlighted during the sessions. This MoU underscores the message of the forum that digital innovation is a key part of modern compliance management.

These partnerships were celebrated as a major outcome of ACF 2025. By combining regulatory bodies, industry expertise, academic knowledge, and technological innovation, the MoUs aim to address the capacity and implementation challenges raised during the forum. For example, the education-focused MoU will help produce skilled professionals who can implement regulations such as the GHS. The technology-focused MoU will provide tools that can effectively handle compliance data and streamline compliance management across jurisdictions. Forum delegates welcomed these announcements with applause, seeing them as concrete steps from dialogue to action. As one speaker noted, such collaborations ensure that the next generation of compliance professionals are both technically strong and globally relevant. In essence, the MoUs and partnerships forged at ACF 2025 will help sustain the momentum of the forum's discussions and enable continuous progress even after the event.

Conclusions and Key Takeaways

Throughout ACF 2025, participants gained a comprehensive overview of both the opportunities and responsibilities that the chemical and allied industry in Asia faces. Key takeaways from the event include the following:

- **Proactive compliance as a competitive edge:** From the opening remarks to the final panel, a recurring theme was that staying ahead of regulatory requirements – whether through adopting standards, implementing GHS, or phasing out hazardous substances – is crucial for business continuity and international competitiveness. As Dr. Satish Wagh noted, companies that "stay ahead of regulatory risk" enjoy a "competitive edge". Regulatory compliance is no longer just about avoiding penalties; it's about building trust with global partners and consumers.

- **The importance of collaboration:** The forum emphasized collaboration at multiple levels: between the industry and regulators (e.g. in developing practical rules), among countries (e.g. ASEAN cooperation on chemicals), and through public-private partnerships (as evidenced by the MoUs signed). Partnerships like those established by RRMA/GPC with academia and technology providers were highlighted as effective means of addressing skill gaps and leveraging technology in compliance. Many sessions implicitly echoed the idea that together we are stronger, whether through companies learning from each other's GHS implementation or regulators aligning their approaches.

- **Knowledge and capacity building:** ACF 2025 placed a strong emphasis on education and capacity development. The launch of the two reference books on GHS and global regulations provides compliance professionals with much-needed resources. Speakers stressed the importance of training, such as training SMEs on using compliance indicators, training the workforce on GHS, and educating young professionals in regulatory science. Building human capacity is fundamental to implementing any regulatory change, whether it be new standards or advanced testing methods.

- **Digitalization and Data-Driven Management:** From compliance indicator dashboards to automated regulatory monitoring tools, the role of digital solutions was a prominent thread during the conference. Embracing digital platforms can streamline compliance management, as demonstrated in the MoU with Conformics Systems, which enables "real-time monitoring and automated workflows". Furthermore, leveraging data (while ensuring its quality) enables more informed decision-making and transparency, which can enhance performance and stakeholder confidence.

- **Sustainability and Future-Proofing**: Many discussions linked compliance to broader sustainability goals. Whether the topic was substituting hazardous chemicals to protect health and the environment, or aligning with global initiatives for a toxic-free environment, the forum emphasized the shift towards safer, greener chemistry. Companies were encouraged to "future-proof" their operations by anticipating regulatory trends, investing in greener technologies and ensuring their product portfolios evolve alongside global sustainability norms.

In closing, the Asian Chemicals Forum 2025 succeeded in not only identifying the challenges on the horizon but also in sharing strategies and forging alliances to address them. Participants left with a clearer vision: compliance and growth are not at odds. In fact, compliance is a pathway to sustainable growth. The forum's executive summary and detailed session proceedings, along with the new publications and partnerships, will serve as valuable reference points for stakeholders as they implement the ACF 2025's lessons in their respective organizations and countries. The consensus is clear: by working together and staying ahead of the curve, Asia's chemical industry can thrive while complying with global standards, ensuring safety, sustainability, and success in the years to come.

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