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Webinar Series

Implementing the Global Framework on Chemicals through Safe and Sustainable Innovation: Global Perspectives and Practice

Webinar Series Report
April–September 2026

1. Executive summary

The three-part webinar series "Implementing the Global Framework on Chemicals through Safe and Sustainable Innovation: Global Perspectives and Practice" connected international chemicals policy with practical approaches to innovation and implementation. Delivered from April to September 2026, it was organised by the International Sustainable Chemistry Collaborative Centre (ISC3), the Inter-Organization Programme for the Sound Management of Chemicals (IOMC), and the United Nations Institute for Training and Research (UNITAR).

The sessions addressed consumer electronics, pharmaceuticals, and Green and Sustainable Chemistry (GSC) in the context of the Global Framework on Chemicals (GFC). Together, they provided five hours of online exchange and recorded 643 total attendances: 227 in April, 172 in July and 244 in September[1].

A consistent message emerged: safety and sustainability need to influence design decisions early, while adoption depends on the conditions surrounding innovation. Safer alternatives must meet performance requirements, be available at scale, and have a viable route to market. Policy incentives, technical assistance, reliable information and collaboration across value chains are essential to make that transition possible.

The examples illustrated different entry points. Electronics discussions focused on substitution, worker protection, circular business models and supply-chain transparency. The pharmaceutical session examined molecular design, environmental degradation and safer manufacturing. The final session connected these experiences with national policies, sectoral tools and the emerging GSC Global Roadmap.

Across 78 survey responses, session-level ratings were positive: 89%, 93% and 96% rated the respective webinars Excellent or Very good. The proportions indicating that they were likely to apply or promote a relevant approach within 12 months were 86%, 89% and 96%. These results indicate perceived usefulness and intended action among respondents.

The series delivered policy and technical exchange, practical examples, participant feedback and documented resources. Suggested follow-up priorities are:

- To provide more detailed implementation cases;
- Improve access to tools and technical support;
- Connect learning with the GFC workstreams; and
- Assess whether participants subsequently apply the approaches discussed.

[1] The same person may have attended more than one session.

2. Background and objectives

The series was developed to address the gap between international policy commitments and practical innovation decisions. Its design recognised that governments, companies and practitioners face difficulties in applying life-cycle thinking, substituting substances of concern early in design, and aligning investment with safety and sustainability across global value chains.

The GFC provided the policy context. The webinar series linked to Target A3 on preventing or minimising adverse effects throughout the life cycle, and Targets D1, D2, D4 and D6 on sustainable innovation, enabling government policies, research priorities, and sectoral chemicals and waste management strategies.

Safe and Sustainable by Design (SSbD), benign-by-design approaches, and broader GSC principles were presented as complementary ways to translate those ambitions into choices about chemicals, materials, products and processes. The series drew on international approaches and tools, including work by the Organisation for Economic Co-operation and Development (OECD), the United Nations Environment Programme (UNEP), ISC3 and the European SSbD community.

Objectives of the webinar series

- **Connect policy and practice.** Explain how sustainability frameworks and tools can support GFC implementation through design, investment and policy decisions.
- **Share practical experience.** Present sectoral case studies, implementation barriers, lessons learned and opportunities for economically viable innovation.
- **Support access to tools.** Introduce existing guidance, assessment resources and partnerships that stakeholders can use in their own contexts.
- **Create space for exchange.** Bring together policy, industry, research and civil-society perspectives and gather feedback on implementation needs.
- **Strengthen sectoral links.** Connect the discussions with relevant GFC implementation workstreams and priorities, including the electronics sector.

Audience and approach

The intended audience included policymakers, companies and start-ups, sustainability practitioners, researchers and designers, including actors in emerging and transitioning economies. The series combined presentations, industry examples, moderated discussion and participant input. Simultaneous Spanish and French interpretation supported access alongside the English-language sessions.

3. Overview of the series

Session and date	Focus	Duration and format
Webinar #1 16 April 2026	Introducing SSbD and the GFC in consumer electronics	90 minutes Presentations, industry panel and discussion
Webinar #2 23 July 2026	Prescription for Change: Safe and Sustainable Chemistry in Global Pharmaceutical Systems	90 minutes Policy, scientific and industry presentations; interactive discussion
Webinar #3 23 September 2026	Green and Sustainable Chemistry in the context of the GFC	120 minutes Tools and case studies; Roadmap consultation and open discussion

The series moved from introducing design-based prevention in electronics to examining pharmaceutical molecules and production processes, then broadened the discussion to the policy, finance and value-chain conditions needed for GSC uptake. All three sessions were delivered online.

4. Main contributions from each webinar

Webinar #1 — Consumer electronics

Kay Williams (GFC Secretariat) linked the discussion to GFC targets on innovation, safer alternatives and sectoral action. Emma Strömberg (IVL) and Lya Soeteman-Hernandez (RIVM) - IRISS (International Ecosystem for Accelerating the Transition to Safe-and-Sustainable-by-Design materials, products and processes) introduced SSbD as an iterative approach that integrates safety and sustainability before products reach the market. Christian Kolbe framed the series as an opportunity to turn high-level commitments into practical action.

The panel, moderated by Minseo Ju (UNEP), brought together Benjamyn Marks (Responsible Business Alliance, RBA), Pamela Brody-Heine (Clean Electronics Production Network, CEPN), Vera Mustafina (Center Cooperation for Sustainable Development -CSD Center- in Kazakhstan). Contributions addressed substitution in manufacturing, worker training, circular design and collaborative standards. Product-as-a-service models illustrated how business incentives can support longer product life and resource efficiency.

The discussion highlighted incomplete supply-chain information, limited alternatives, and the cost and time required for process changes. Participants asked for support adapted to smaller companies and developing-country contexts. Stepwise monitoring, stronger information exchange and training that extends to recycling and waste management emerged as practical priorities.

Webinar #2 — Pharmaceuticals

Stéphanie Laruelle (UNEP) presented pharmaceuticals in the environment as a life-cycle issue requiring action across production, use and disposal. Professor Klaus Kümmerer

("Evaluation and Design of Chemicals" Kenzingen, Germany) then explained how benign-by-design approaches can retain the intended function of pharmaceutical compounds while improving their degradation after use. He placed molecular design within the broader context of sustainable pharmacy.

Nitesh Mehta (ChemisTree Foundation) illustrated process innovation in India. One example replaced hazardous solvents, high-pressure hydrogenation and a pyrophoric catalyst with a water-based process, while improving yield and enabling water reuse. Another explored recovering valuable materials from a contaminated pharmaceutical wastewater stream.

The discussion, moderated by Delena Indar, identified a combination of interventions: earlier prevention, education, research and investment incentives, environmental criteria in authorisation, sustainable procurement, and better collection and disposal. Speakers stressed that greener individual processes need to be assessed within the full pharmaceutical system.

Webinar #3 — Green and Sustainable Chemistry

Moderated by Bob Diderich (OECD), the final webinar examined how to support adoption at scale. Kay Williams and Anna Isabel Becker (ISC3) connected GSC with the preventive ambition of the GFC. Mar González (OECD) introduced OECD innovation and alternatives-assessment tools, while Camila Boechat (Brazilian Ministry of the Environment and Climate Change) described Brazil's efforts to connect chemical safety with circular economy, bioeconomy, industrial and financing policies.

Markos Ieridis (UNEP) introduced the UNEP GSC Expert Group. Anja Klauk and Shannon Lisa (GSC Expert Group) presented the emerging Roadmap's four themes: innovation; value chains and sectors; knowledge, evidence and education; and financing. Joel Tickner (University of Massachusetts Lowell / Change Chemistry) highlighted the gap between developing innovations and securing industrial adoption. Saket Kulkarni (Zero Discharge of Hazardous Chemicals, ZDHC) illustrated how their tools support chemical-input management in textile and related supply chains.

The consultation prioritised national policy integration, practical guidance and capacity building. Participants also raised finance, support for smaller companies and community inclusion. Mihaela Paun's (UNEP) closing remarks called for coordinated partnerships and measurable action across value chains.

5. Lessons across the series

The three sessions identified a shared implementation challenge: developing a promising solution is only one step towards changing routine practice. The following lessons synthesise the presentations and discussions.

- **Prevention and life-cycle thinking.** Early design decisions influence hazards, exposure, resource use and end-of-life outcomes. Assessment should consider the full life cycle so that improvements at one stage do not shift impacts elsewhere.
- **Substitution and practical support.** Performance, affordability, reliable supply and the feasibility of modifying production processes all affect adoption. Technical assistance,

joint testing and demonstration projects can help companies assess and introduce alternatives.

- **Policy and finance.** Regulation, procurement, investment incentives and consistent demand signals can reinforce one another. Financing needs to cover testing, scale-up and adoption, alongside research. Smaller companies require accessible technical and financial support.
- **Collaboration and information.** Brands, suppliers, formulators, manufacturers and downstream actors need information they can use. Traceability, assessment tools and shared criteria can improve decisions, while pre-competitive cooperation can address common problems without requiring full disclosure of proprietary formulations.

- .**Capacity and inclusion.** Learning needs extend beyond specialists to early-career professionals, communities and actors in recycling and waste management. Support should build on existing institutions and reflect national capacity and sectoral priorities. Participation and representation

Context	Distinct implementation challenge	Response discussed
Electronics	Complex supply chains; limited material disclosure; cost of process changes	Supplier collaboration, worker training, traceability and circular business models
Pharmaceuticals	Therapeutic function alongside environmental persistence and multiple release pathways	Benign molecular design, safer processes and measures across use and disposal
GSC across sectors	Innovations remain in niche markets; fragmented policy and investment signals	Coherent policies, technical assistance, sectoral tools and coordinated financing

The series recorded 643 total attendances across three webinars. Of these, 352 were recorded as staying for more than 60 minutes.

Reported measure	Webinar #1	Webinar #2	Webinar #3
Total attendance/ Stayed more than 60 minutes	227/ 141	172/ 91	244/ 120
Gender: Female/Male/Prefer not to say/ Unknown	36%/ 39%/ 2%/ 23%	45%/ 53%/ 2%	44%/ 55%/ 1%
Represented sectors			
Government	23%	30%	30%
Industry / industry association	13%	15%	26%
Academia	11%	13%	13%
Consultancy	10%	12%	NA
Non-governmental / non-profit	8%	14%	17%
Intergovernmental organisations	6%	3%	5%
Other sectors	6%	14%	9%

Geographical reach

The attendance maps show participation across the Americas, Europe, Africa, Asia and Oceania. This is consistent with the series' international audience[2].

7. Participant feedback and learning

The reports record 28, 27 and 23 survey responses respectively, giving 78 responses across the series. The table compares reported session-level indicators. Respondents and topic-specific questions differed, so these figures should not be interpreted as a trend for the same group of learners.

Indicator	Webinar #1	Webinar #2	Webinar #3
Survey responses	28	27	23
Rated Excellent or Very good	89%	93%	96%
Likely to apply or promote an approach within 12 months	86%	89%	96%
Very likely to do so	54%	74%	83%

Self-reported learning

All three reports describe improved self-reported understanding after the session. The first two report a shift towards "Somewhat well" and "Very well" for understanding the frameworks and identifying enabling conditions. For Webinar #3, understanding of the GFC and GSC rated "Somewhat well" or "Very well" rose from 30% before the session to 91% afterwards. The equivalent result for identifying enabling conditions rose from 43% to 96%.

Relevance and intended application

Respondents proposed applying design principles, engaging management, improving procurement and laboratory practices, incorporating examples into education, strengthening chemical-waste management and organising community awareness. In Webinar #3, all 22 respondents who answered the relevance question selected Relevant or Very relevant. Intended application has not yet been verified through follow-up.

Priorities for future learning

Requests across the series favoured practical case studies, step-by-step implementation guidance, chemical safety and risk assessment, financing, and examples suited to developing-country contexts. Digital tools and artificial intelligence also attracted interest. Webinar #3 feedback included a request for more critical examination of regulatory shortcomings. Interactive discussion was valued: 96% in Webinar #2 and all respondents in Webinar #3 considered oral or written input useful.

[2] Maps are available in the individual webinar reports.

8. Conclusions and follow-up priorities

The series addressed its principal objectives by connecting the GFC with practical approaches, presenting sectoral examples and tools, and creating space for stakeholder exchange. The reports and feedback provide evidence of perceived learning and usefulness.

- **Recommended follow-up.** Prioritise applied sessions with detailed cases and implementation tools; connect participants to sectoral workstreams and technical-support networks; and conduct a short follow-up survey on actions taken and barriers encountered.

9. Resources

Recordings, presentations and session materials are referenced through the following pages:

- Series resource page
- Webinar #1 resource page
- Webinar #2 resource page
- Webinar #3 resource page

Comments? Questions?
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