

pinfa Advisory Board – Eight Meeting

Wednesday 30 September 2020

10:00 – 12:15 CET

VIRTUAL

The content of this report is a capture of the inputs from individual participants. The views included are therefore those of single participants and not the consensus of the group as a whole.

This report

1. Participants
2. Purpose of the meeting
3. The 8th pinfa advisory board meeting
4. Ideas to move forward

1. Participants

External representatives

Krzysztof Biskup, *Vice-Chairman, European Fire Safety Alliance*

Sicco Brandsma, *Senior Researcher, Vrije Universiteit Amsterdam*

Jacob De Boer, *Head of Department Environment and Health, Vrije Universiteit Amsterdam*

Quentin De Hults, *Senior Manager Construction Advocacy and Sustainability, BASF and Executive Chair of the Modern Building Alliance*

Hervé Feuchter, *Fire Safety Engineer, CREPIM*

Stephen Fuller, *Senior Criteria Manager, TCO Development*

Frank Kuebart, *Managing Director, ECO Institut Germany GmbH*

Franck Poutch, *Director, CREPIM*

Marc Sans Armenter, *Chief Officer, Catalan Fire Department*

Laurent Tribut, *Technical Expert, Schneider Electric*

Izabella Vermesi, *Fire Engineer, Bureau Veritas*

pinfa representatives

Esther Agyeman-Budu, *General Secretary*

Adrian Beard, *Chairman*

Vincent Mans, *Technical Advisor*

Guest Speaker

Sylvie Lemoine, *Executive Director, Cefic Product Stewardship*

External moderators

Simon Levitt, *Moderator, Harwood Levitt Consulting*

Lars Stollenwerk, *Assistant moderator, Harwood Levitt Consulting*

Sara Gharsalli, *Assistant moderator, Harwood Levitt Consulting*

2. Purpose of the meeting

Pinfa represents the manufacturers of phosphorus, inorganic and nitrogen flame retardants (PIN FRs) and is a Sector Group within Cefic, the European Chemical Industry Council. The members of pinfa share the common vision of continuously improving the environmental and health profile of their flame-retardant products. In addition, pinfa regards and promotes flame retardants as an essential element of fire safety technologies. These are the reasons why pinfa members seek to maintain a dialogue with the users of PIN FRs to identify the needs and technologies they are looking for.

In recent years, there has been increased public discussion about FRs. Concerns have been raised about the environmental impacts of FRs, largely, but not solely, regarding halogenated FRs. Conversely, where FR use has decreased, concerns have been raised about fire safety. Subsequently, a debate emerged about the appropriate use of FRs and if alternatives being used provide sufficient fire safety.

This group convenes on average twice a year. It is an open group, meaning pinfa extends invitations to new stakeholders depending on the topics discussed.

This eighth edition took place in September 2020. Travel in Europe was still largely suspended due to the COVID-19 pandemic. As such, for the second time, the Advisory Board meeting took place virtually. As last time, the meeting was scheduled to take two hours rather than a full day to ensure optimal participation and engagement.

This report does not capture the content of the previous Advisory Board meetings, which is available in the separate document on Background & Previous Meetings.

The Chatham House Rule

The meetings follow the Chatham House rule, whereby minutes include who attended and what was discussed, but opinions are not attributed to individual participants.

Competition and Compliance

The meetings are held in strict compliance with EU and international antitrust laws as well as Cefic dos and don'ts.

3. The 8th pinfa advisory board meeting

The 8th pinfa advisory board meeting took place on the 30th of September 2020 with a diverse group of stakeholders from the flame-retardant (FR) industry, downstream user industries, testing and research institutes.

For the second time, the meeting took place online due to the COVID-situation. In order to gauge interest in the various topics that the Advisory Board has touched upon before, participants were invited to input to an overview survey. These inputs will be used to inform the selection of topics for Advisory Board meetings in the near future.

The meeting was centred on two presentations and the discussion around these. The first presentation covered the activities pinfa has undertaken based on the recommendations of the Advisory Board. In the second part Sylvie Lemoine, Executive Director for Product Stewardship of Cefic, discussed the Roadmap for Sustainable Chemicals and what this means for pinfa and the broader landscape.

a. Pinfa activities based on Advisory Board recommendations

Since the kick-off of the Advisory Board meetings, pinfa has undertaken several activities as a consequence of the Advisory Boards recommendations. A key ask of the 7th meeting was to review these so that the group is up to date.

1) Study smoke toxicity, in cooperation with Crepim

The study sought to analyse if various types of flame retardants increase smoke toxicity in polymers and if so, how the effect varies depending on the flame retardants. Within the project about 100 samples were analysed. It is clear from the study that halogen flame retardants tend to give the highest toxicity results. **The overall takeaway is that PIN (phosphorus, inorganic, nitrogen) flame retardants do not significantly increase the toxicity and amount of smoke of polymers.** Compared to halogenated flame retardants, they generally perform better. There are significant differences between the different types of flame retardants and how they interact with certain types of polymers.

The study also considered smoke density. This aspect is important for visibility during the evacuation of burning buildings. The highlight in this aspect is that PVC contains a lot of chlorine and produces copious smoke, which is more toxic than average.

It is important to note that the study concluded that flame retardants do not significantly add to the acute toxicity of smoke. This does not diminish the danger posed by the overall toxicity of smoke, which remains an important consideration in fire-fighting. Flame retardants bring benefit in reducing the spread of flames, giving time for evacuation. This generally outweighs the incremental additional exposure to smoke toxicity in the event of fire. It is important to distinguish between acute toxicity, which kills in the event of fire, and long-term toxicity and carcinogenicity of smoke, which damages health not immediately but over the long term. This study did not analyse the long-term toxicity of smoke. In addition, the study does not compare flame retardants based on corrosivity. Both could be considered in future studies, depending on resources.

Ultimately, the discussion on the use and performance of flame retardants needs to balance their risks and benefits. There is a risk of, albeit limited, additional acute smoke toxicity and additional chronic smoke toxicity. The benefit of flame retardants is more time for civilians to evacuate and for firefighters to arrive on the scene and to limit the spread of fire so as to make it more containable. While studies

such as these help in providing more information, extrapolating these studies to real-world fire scenarios remains a challenge due to each real-life fire being a unique situation. To capture the full scale of fire reaction parameters to consider, Crepim uses the mnemonic summary 'FIRST':

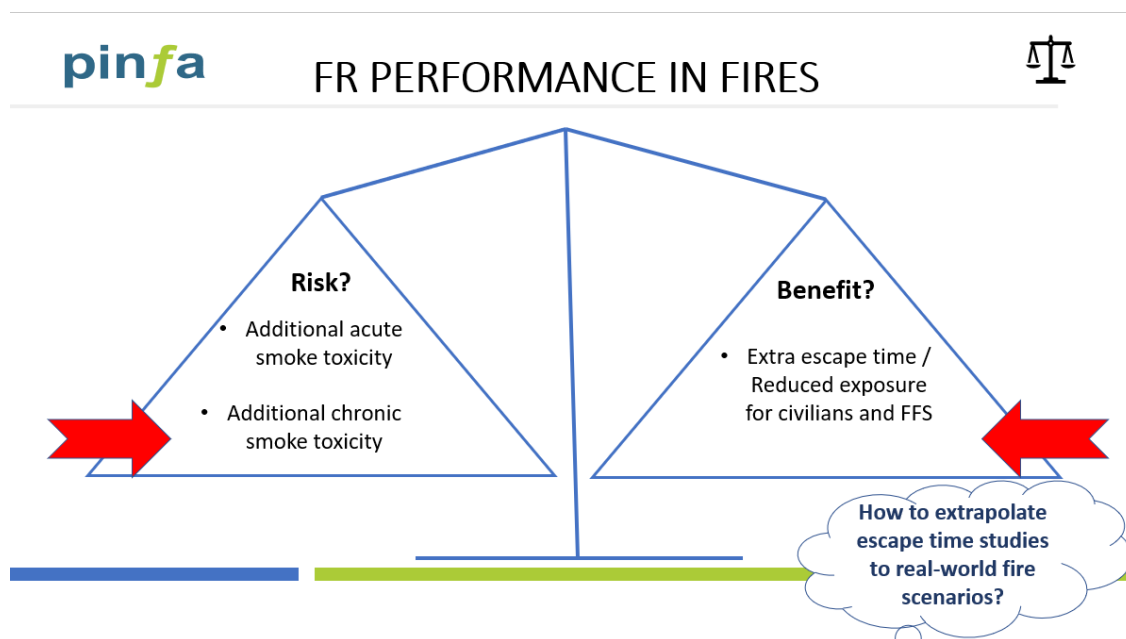
- F for Flammability
- I for Ignitability
- R for Rate of heat Release
- S for Smoke
- T for Smoke Toxicity

No single bench-scale test can assess all these five different parameters together. With the SMOKETOX campaign Crepim concentrated on smoke (S) and smoke toxicity (T) parameters. Flammability, ignitability and heat release were not assessed in this study but could be assessed by other test methods to evaluate the impact of flame retardants on these topics.

Pinfa is following up on this study by analysing natural materials and comparing these to the result of flame retardants.

Potential actions

- A next meeting can discuss how the benefits and disadvantages of flame retardants weigh up in a real-life fire situation. Are there fire situations where flame retardants are not useful at all, and when is the time they buy for first responders critical?



2) Swedish tax on electronics

The Swedish tax on electronics is a tax on electronic goods, aiming to incentivise the substitution of problematic flame retardants, or even all flame retardants. The lowest tax possible is 10%, due to the inevitability of some 'dangerous' chemicals being present in products. The tax makes electronic materials significantly more expensive in Sweden. This includes not only electronics like computers and mobile phones but also household appliances such as washing machines.

Pinfa, the manufacturers of electronic equipment and some environmental groups criticize the tax. The tax penalises additive flame retardants and promotes polymeric or reactive flame retardants. While polymeric or reactive flame retardants do have some benefits, this does not mean that all additive flame retardants are damaging. The substantial differences within the category of additive flame retardants are ignored by this tax. In addition, the implementation of the tax relies largely on self-declaration, which causes non-adherence by some actors, distorting competition. Pinfa is working to amend the tax with the Swedish chemical and tax authorities.

This touches on the question whether taxation is a good way of incentivizing substitution and if so, how this should be properly implemented. Currently, taxation is a national competence, meaning that theoretically there could be 27 different taxation schemes for the production of electronic or chemical equipment. This would be damaging to manufacturers, retailers and the rest of the sector involved. Standardising the taxation scheme would solve this.

3) Product selector

The pinfa product selector is an online database on the pinfa website where you can look up the properties of flame retardants that are produced or offered by pinfa members. The database was expanded based on a suggestion by the Advisory Board that pinfa offer more accessible information on its products. The database also contains information on the regulatory status and a description of its state and uses with links to further information. The product selector offers verified information from product manufacturers, other than Wikipedia. Wikipedia articles on flame retardants are often incomplete or have varying content depending on the language used.

4) Response to scientific paper on Phosphate Esters

Pinfa is preparing a response to the paper ‘Organophosphate Ester Flame Retardants: Are they a regrettable substitution for Polybrominated Diphenyl Ethers?’, published in Environmental Science & Technology Letters. The paper hypothesises that organophosphates should be regulated and reduced in use. While the paper makes some good points, the paper generalises and draws conclusions from a subgroup. While there are reasons to argue for the reduction of phosphate esters, the approach the paper argues for is imbalanced. Its conclusions should apply to specific subgroups rather than to the whole family of flame retardants.

5) Pinfa activity on e-mobility

Pinfa is planning a webinar on 28 October on e-mobility and flammability requirements for materials. As new technical and flammability requirements are coming up, new laws need to be developed for high voltage products. The question of standards for measuring this needs to be addressed to ensure the safety of electrical vehicles. Sustainable flame retardants need to be used and not just the cheapest ones.

6) Recyclability of flame retardants

Electronic waste is a key area of industry activity. Stakeholders need to consider how the flame retardant content of materials can be captured and recycled. This is a big challenge due to the variety of materials and how they interact with each other. Pinfa completed a project that considered how the production of PIN flame retardants can keep their eventual recycling in mind with clean streams of defined polymers. This is possible but each recycling step degrades the polymer, whether it contains flame retardants or not. Next year, pinfa will take this project forward by considering how to “upgrade”

non-flame retarded recycled polymer grades with flame retardants for use in electric and electronic applications. In the second stream, there is an issue with legacy flame retardants that are present in products that are being recycled which contain flame retardants that shouldn't be re-used in new products. The question here is how to phase these out and separate them. Pinfa is also considering recycling processes via pyrolysis and solubilization in order to achieve the desired recycling rates.

7) Flame retardants training deck

Pinfa is developing a presentation that explains flame retardants and their application areas. It will serve as an easily accessible resource for academia and scientists. This should be available by the end of the year.

b. Roadmap for Sustainable Chemicals

Sylvie Lemoine, Executive Director for Product Stewardship of Cefic, presented the key highlights of the new Chemicals Policy initiative, which was followed by a short discussion.

Background

The European Chemicals Strategy for Sustainability is one of the most anticipated topics for this autumn. Politico ranked the Strategy as the 5th most important topic in the coming months, located between migration and Brexit. This shows that the Strategy is not a niche work but is very substantial and will draw a lot of political attention.

The Chemicals Strategy for Sustainability is part of the European Green Deal, under the Zero Pollution ambition. Sustainability is a key part of the strategy – it's not just about chemicals. The sustainable future is a key focus of the strategy.

In the last decades, Europe has lost competitiveness in the production of chemicals to other regions. Yet, to achieve a greener future as envisaged under the Green Deal, we will need a lot of high-performance chemicals that are durable and adapted to the specific needs. These chemicals are central to the construction of wind turbines, batteries and more. Cefic and European policy makers would prefer these chemicals to be produced in Europe. The Chemicals Strategy for Sustainability is going to be a turning point for the legislation on chemicals and is as such vital to this goal. The size of the project is comparable to the start of REACH about 20 years ago.

The Chemical Strategy for Sustainability is an umbrella for multiple separate legislative actions on various topics. One of the topics that will be included are the so-called 'legacy topics', which were part of a Strategy for a Non-Toxic Environment that was postponed in 2017. This concerns endocrine disruptors and mixtures, vulnerable populations, chemicals in products, and hazardous chemicals in products and substances of concern. As part of the legislative process, the European Commission has conducted Fitness Checks to assess what works and may not work in existing EU legislation. The EU legislative process is extremely complex and sophisticated. Other relevant EU legislative steps were the European Parliament resolution on the Chemical Strategy of 10 July 2020 and the Council Conclusions of June 2019. In addition, the general public seems to be concerned about chemicals, which gives a democratic mandate to ensure the Chemical legislation is updated. Taken all together, these developments support the call for an ambitious Strategy.

A separate but linked initiative is the Circular Economy Action Plan which is relevant for chemicals as it touches, among others, on toxic-free material cycles and the minimisation of hazardous chemicals.

The Chemicals Strategy was published on 14 October 2020.¹

¹ The European Commission communication on the Chemicals Strategy for Sustainability can be found [here](#).

Structure of the Chemicals Strategy for Sustainability

The Strategy is built on five major blocks:

1. Innovating for safe and sustainable EU chemicals

This aims to address the wider environmental and health concerns and to move towards more preventive and more hazard-based measures where possible. The concept of ‘safe and sustainable by design’ is a key factor that aims to be a catch-all strategy to bring sustainable solutions that improve EU industrial competitiveness while being mindful of socio-economic consequences.

- Promoting safe and sustainable-by-design chemicals
- Achieving safe products and non-toxic material cycles
- Greening and digitalising the production of chemicals
- Strengthening the EU’s open strategic autonomy

2. Stronger EU legal framework to address pressing environmental and health issues

The Commission aims to strengthen the REACH and CLP regulations in order to make the legal framework more coherent, simpler and more predictable. Regulatory action needs to be taken faster. The Commission acknowledges that the current framework is not suitable to deal with ongoing and emerging health and environmental problems and aims to address its shortcomings by adding more generic restrictions to manage chemicals, especially in consumer products.

- Protect consumers, vulnerable groups and workers from the most harmful chemicals
- Protecting people and the environment from the combination effects of chemicals
- Towards zero chemical pollution in the environment

3. Simplifying and consolidating the legal framework

The Commission acknowledges that the current legal framework is very complex, which undermines its full potential. A key goal is making the assessment process more transparent, which will benefit all stakeholders. This will be among others be achieved by regulating chemicals by groups rather than substance-by-substance (in addition to the rule “one substance, one assessment”) as well as improving the enforcement of reducing non-compliant chemicals.

- One substance, one assessment
- A zero tolerance approach to non-compliance

4. A comprehensive knowledge base on chemicals

This section will focus on improving the knowledge on the various chemicals for some specific properties. This will result in better knowledge of the impact of chemicals on the environment and drive innovation.

- Improved availability of chemical data
- A strengthened chemical science-policy interface

5. Setting the example for a global sound management of chemicals

The Commission wants the EU to take a leading role globally to champion sound chemical management and harmonize and strengthen international standards. As the global production of chemicals continues to rise, the European share of this industry is likely to shrink. It is important that the EU positions itself as a leader in safe and sustainable chemicals to drive change on a global level.

- Strengthening international standards
- Promoting safety and sustainability standards outside the EU

Key takeaways on Sustainable Chemicals Strategy

Cefic welcomed the compliance, enforcement and innovation proposals in the Chemicals Strategy for Sustainability but warned for missed opportunities and a potential lack of coherence.² While a lot of regulatory measures are proposed, it is currently unclear how these will be coordinated and assessed to obtain shared objectives towards the Green Deal and concrete implementation. Overall, Cefic would have preferred more ambition to drive investments in innovation and sustainability chemistry that help achieve the goals of the Green Deal and the ambition for a climate-neutral Europe by 2050.

Cefic is pleased with the sustainable by design concept, the intention to improve compliance of imported chemicals and the opening for more dialogue between industry and stakeholders. These will be necessary to establish regulatory predictability, which is key for industry, and to help drive investments.

Yet there are also risks factor. Brexit threatens to deepen regulatory divergences between the chemical industry of the EU and the UK rather than harmonizing them. In addition, there is a threat that the Chemicals Strategy results in a complete overhaul of REACH, which would be counterproductive. It is important that impact assessments take place in order to ensure a targeted revision of legislative framework.

Zooming in on flame retardants, the Strategy will need to find a balance between the quality of flame retardants and their sustainability. Most flame retardants are very persistent because they are designed to be durable and stable. Some flame retardants have hazardous properties as a pure substance, but these may not be relevant in the use phase when embedded or reacted into a polymer. The phase-out of legacy flame retardants that have been shown to be problematic is slow and often delayed. With proper incentives and a new framework, progress could be possible.

The desire to transition to a new model, a paradigm shift, is clear. If industry manages to create more sustainable chemicals this will create market opportunities to set the trend and regain competitiveness. The various measures will impact pinfa, both in the sense of opportunities arising and difficulties to be addressed. This will be a work that takes years of implementation and its impact will last for decades.

² Please find Cefic's full press release on the Chemicals Strategy for Sustainability [here](#).

4. Ideas to Move Forward

The group was again positive about the initiative of the Advisory Board Meetings. The fact that there were participants from the scientific community was welcomed, particularly given the range of backgrounds and expertise in the room.

The solutions proposed in this document are high-level and can be difficult and costly to implement. For example, pinfa has neither the resources nor the power to change standards alone. Nonetheless, the group believes there are concrete actions this group can take in assessing what key questions need to be answered and what possible solutions other relevant stakeholders can take forward.

The next meeting will likely take place in late January / early February 2021.

Once agreed by the participants, this document can be used by any of the group in discussions with others, to show the areas of exchange and to encourage collaboration on the topics involved.