



# Annual Report

## 2018

**pinfa**

Phosphorus, Inorganic & Nitrogen Flame Retardants Association

[www.pinfa.eu](http://www.pinfa.eu)

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## EXECUTIVE SUMMARY 2018 at a glance

Throughout 2018, pinfa has maintained a high level of activities and commitment to promote PIN flame retardants in Europe and beyond. Indeed, 2018 is a watershed because it has been the first year with operations on three continents: in Europe where it all started in 2009, in North America where it grew in 2012 and now in China, where the thriving market offers many growth opportunities.

Fire Safety is one of the guiding concepts for our organization and we have been busy promoting it for prioritization in European Research programmes, in scientific bodies and in standardization platforms. One of the overarching principles in many sectors facing challenges in the selection of materials, Fire Safety deserves a high position on the political agenda and pinfa will keep pledging support to ensure it becomes more and more visible. Since pinfa is committed to deliver positive advocacy on non-halogenated flame retardants, our

resources were invested in mostly three themes where pinfa could make a difference: first and foremost, the continuation of the work undertaken on smoke toxicity ought to deliver excellent sound scientific results on the toxicity of PIN flame retardants formulations. Second, pinfa kicked off a series of electromobility & flame retardants workshops, the first of which took place in Shanghai this November. Last but not least, pinfa maintained activities in its advisory board to collect feedback and constructive criticism over its initiatives.

Finally, 2018 ends in brio, with two new members who strengthen the pinfa portfolio and widen its scope: Schneider Electric, a world leader in the E&E sector is now fully integrated as an associate member and OMYA, one of the leaders in distribution of flame retardants is also a proud addition to the list of pinfa members.

Yours faithfully,



Jonathan Crozier  
Pinfa Secretary General



Adrian Beard,  
Pinfa Chairman



# PROJECTS

## Electromobility in China: Fire safety challenges

The automotive value chain is facing electromobility challenges such as compliance with standards and requirements of materials, choice of flame retardants, compliance with fire safety regulations and future demands of circular economy. While the momentum on electro-mobility is strong, pinfa wishes to catalyze discussions and offer support in order to enable international cross-fertilization between Europe and other parts of the world. pinfa members prioritized China as the first country where synergies could be created. As a result, the first electromobility & PIN FRs workshop of a series kicked off on November 21-22 in Shanghai, China. Our purpose was to kickstart cross-fertilization between European know-how and Chinese market expertise. Both horizontal approach and vertical, part-related (connectors, wires, batteries, chargers etc.) approaches fostered fruitful discussions at the workshop. Pinfa also demonstrated the recyclability of materials including pin flame retardants potentially contributing to circular economy.

With its ambitious targets for electric vehicles, China is leading globally in the sales of electric vehicles with almost 600 000 cars sold 2017, three times the number of the next runner up, the USA. Electric vehicles pose new fire risks coming from the battery and high voltages and currents in charging and operating the cars. Safety standards for batteries, cables, connectors etc. are still under development and not globally harmonized.

For polymer materials particular challenges are e.g. resistance to arcing (high current tracking index = CTI), colourability and colour stability, especially for the “signal orange” for high voltage parts. To protect against risks from electrical faults, UL 94 V0 standard is now required by most OEMs in China.

Thanks to the support of Adeka, Budenheim, Clariant, Dupont, Huber and Nabaltec, the Shanghai event was empowered with local help and production of proceedings was enabled. The workshop brought together more than 120 participants from OEMs, from tier 1 and 2 manufacturers in the automotive sectors, academia and plastic/FR industry representatives. With attendees from Europe, Japan and China, the event has been an overwhelming success for the electromobility value chain, paving the way for a more integrated collaboration between our industry and one of its largest downstream users group.



PINFA MEMBERS PRIORITIZED  
CHINA AS THE FIRST COUNTRY WHERE  
**SYNERGIES COULD  
BE CREATED**

FIRST ELECTROMOBILITY  
& PIN FRs WORKSHOP

**140+**  
PARTICIPANTS

**600.000**  
**HEV & BEV**  
SOLD IN CHINA IN 2017

Goal by 2050:  
**4 OUT OF 5 CARS**  
SOLD IN CHINA  
**TO BE BEV**

HIGHER ENERGY DENSITY  
FOR BATTERIES  
**DRIVES A HIGHER  
FLAMMABILITY RISK**



# PROJECTS

## Smoke Toxicity test Campaign

Last year, pinfa sponsored a literature study with Crepim fire testing laboratory to map out the current state of the art on smoke toxicity data for flame retardants. The results acknowledged a data gap: few scientific articles have covered the influence of fire retardants on smoke toxicity from polymers. To date, no systematic comparative study has evaluated the influence of fire retardants, and in particular PIN flame retardants, and their matrix in relation with the toxicity and smoke opacity hazards.

This study has been input to the European Commission's ongoing work on the EU Construction Products Directive, to which pinfa has actively contributed information in 2018, both in the Commission working group and via the public consultation. The study commissioned by DG GROW on possible regulation of smoke toxicity in this Directive noted that available data show that flame retardants do not contribute significantly to fire toxicity, and that further research is needed<sup>1</sup>.

Therefore, pinfa members decided to commission a test campaign to get a more comprehensive overview of the issue. In this test campaign, the combustion of a total of 92 commercial and non-commercial plastic samples originating from 12 voluntary pinfa members (Adeka, BASF, Budenheim, Clariant, Dupont, FRX Polymers, Greenchemicals, Huber, Lanxess, Nabaltec, Sabic, Total) was evaluated. The influence of halogenated, phosphorus, inorganic or nitrogen-containing flame retardants (FRs) on smoke toxicity was studied in comparison with reference samples free of any FRs. The composition of the smoke was studied according to two different methods of analysis in a tubular furnace (NF X 70-100) at 600°C and under the single smoke chamber method (ISO 5659-2 at 50 kW m<sup>-2</sup> and without pilot flame) equipped with a FTIR analyser (EN 45545-2, annexe C).

The amount of asphyxiant gases such as carbon monoxide and hydrogen cyanide as well as irritant gases such as hydrogen chloride, bromide or nitrogen dioxide has been measured for each burned polymer. Smoke density at various time intervals was also assessed for each sample. Due to the large amount of collected data, analysis was performed with the help of a software package, referred to as CORICO (ICONography of CORrelations) by Crepim, the laboratory in charge of the campaign. The CORICO software was used to calculate correlations between factors and responses obtained within this study. Significant responses between sample composition, fire retardant nature, smoke composition and density were established. The influence of sample preparation as well as other factors such as the inclusion of glass fibre were evaluated as well.



Images: smoke toxicity chambers and tubular furnaces used by Crepim.



A major project for pinfa in 2018, this campaign is expected to come out as a major contribution of pinfa to produce good science for future discussions on safety of materials. Conclusions will be discussed shortly, and 2019 eyes at disseminating the results of this test campaign in peer-reviewed publications, where it could make a difference.

<sup>1</sup> Study to evaluate the need to regulate within the Framework of Regulation (EU) 305/2011 on the toxicity of smoke produced by construction products in fires. Final Report", T. Yates, BRE / Ecorys, VITO for the European Commission DG GROW, October 2017 (published January 2018) [http://ec.europa.eu/growth/sectors/construction/support-tools-studies\\_nl](http://ec.europa.eu/growth/sectors/construction/support-tools-studies_nl) and pinfa Newsletter n°89





## PROJECTS

### Challenging Sweden's 'ecotax' on FRs in electrical goods

On 16 October 2018, pinfa, Hewlett Packard and the Swedish IT Association organized the first "Round Table on the Swedish Tax on Electronics" to address the weaknesses of the current Swedish tax on chemicals (including all kinds of flame retardants). In doing so, we sought to pinpoint the current chemical regulation issues and suggest improvements to ensure an amended regulation actually meets its intended goal, i.e. to stimulate producers to select 'safer' flame retardants. With representation from the industry (E&E, white goods, pinfa), regulators (national and European) and a vast majority of interested stakeholders (Elektrolux, Apple (USA), Samsung (Sweden), Swedish Engineering Association, Swedish Electronics Branch, ECHA (European Chemicals Agency), Swedish Whitegoods Assoc., Sharp (Sweden), Confederation of Swedish Enterprises, Swerea (part of RISE from 1 October 2018), TCO (Swedish ecolabelling organisation), the newly set up Swedish Centre for Chemical Substitution and KEMI (Kemikalieinspektionen = Swedish Chemicals Agency) as well as Chemsec, this first roundtable allowed to find out

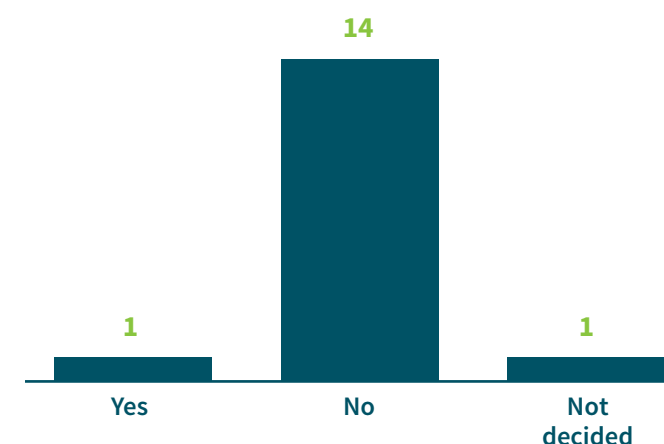
an almost unanimous agreement: the tax in its current form is not fit for purpose and should be revised.

Although there was no general agreement especially from NGOs and regulators, that taxing "bad" chemicals is a not a good approach in general, the round table agreed that the current tax is missing its target. The meeting focussed on the chemical aspects of the tax, which currently penalizes additive FRs vs. reactive / polymeric FRs. Art Fong from Apple and Hans Wendschlag from HP made the case that there are also additive phosphorus based FRs with excellent environmental and health profiles as proven by e.g. GreenScreen assessments. Other more general aspects of the tax, including the question whether it brings a net cash benefit for the Swedish state were also discussed, but not elaborated further.

In the end, a few people, including pinfa, volunteered to draft a "white paper" on why and how the tax should be improved. The group plans to re-convene in January 2019 to discuss the document and also how to take this forward towards the yet to-be-formed Swedish government.

#### Survey conducted by pinfa with Mentimeter:

Do you think that tax has been designed so that it will meet its goals, i.e. to stimulate producers to se 'safer' alternatives?



**\$500m**  
domestic sales loss

**Up to 1400**  
Swedish jobs lost

(HUI data)

#### In a nutshell: Swedish tax on chemicals

In April 2017, the Swedish Tax on Chemicals in Certain Electronics entered into force which put a tax on electronic articles and white goods. The tax rate depends on whether and which halogenated (brominated, chlorinated) or phosphorus based flame retardants are used. The aim of the tax is to promote substitution of "critical" flame retardants by posing a "penalty" tax on them – in addition to the obvious benefit of raising money for the State. Since taxation is a fully national legal domain, the law does not need to be aligned within the European Union.

The articles covered by the tax are defined by custom's number and include dishwashers, freezers, refrigerators, washing machines, tumblers, computers, laptops, tablets, vacuum cleaners, ovens, stoves, toasters, mobile and stationary phones, routers, CD and DVD players, radios, TV sets, computer screens and game consoles.

The tax is calculated on the weight of the article, without packaging.

#### The tax rate is:

**8 SEK/kg (0.90 USD) for White Goods**  
120 SKR/kg (13 USD) for Electronics  
**max. 320 SEK (36 USD) per item**

The law entered into force on 1st April 2017, tax has been payable from 1st July 2017.



## PROJECTS

### Aiming for fire safety in the next EU Framework Programme

pinfa has been active throughout 2018, working with other stakeholders, to promote the inclusion of fire safety in Europe's 9th Framework Programme "Horizon Europe", which will follow on from Horizon 2020 and is expected to have a budget of around 100 billion € EU funds for 2021-2018. EU R&D projects funded in the Framework Programmes enable large-scale fire research and testing, with European recognition, and also input into future EU fire safety policy decisions and legislation. In the past, EU funding has enabled projects such ENFIRO (2009-2012<sup>2</sup>) and CBUF (1990's<sup>3</sup>), but fire safety was completely absent from Horizon 2020<sup>4</sup>. Both in advance of and following the publication<sup>5</sup> by the EU of the Horizon Europe proposal on 7th June 2018, pinfa engaged with researchers, other industry federations, firefighters, testing labs and fire protection associations, to promote working together for an EU "mission" on fire safety.

pinfa alerted the European Commission and participated at workshops at the Nordic Fire Safety Days<sup>6</sup> and ESFS Nancy<sup>7</sup>, leading to the organisation of a stakeholder meeting in Brussels by IAFSS<sup>8</sup> (3rd December 2018<sup>9</sup>) to discuss an "Agenda 2030 for a Fire Safe World". pinfa hopes that this will open dialogue across industry, fire safety stakeholders and researchers, on how fire safety can address key challenges and opportunities for tomorrow's society, such as: ageing population, changing climate (wildfire risk), new materials and increasing use of bio-sourced and recycled materials, new energy systems, highly insulated buildings, safer chemicals, connectedness of things.

<sup>6</sup> <https://www.conferencemanager.dk/NFSD2018/nordic-fire-safety-days-2018.html>

<sup>7</sup> <https://esfs2018.sciencesconf.org/>

<sup>8</sup> International Association for Fire Safety Science <https://iafss.org/>

<sup>9</sup> <https://www.eventbrite.co.uk/e/workshop-to-define-a-fire-safety-mission-foreurope-registration-50848694815>

<sup>2</sup> [www.enfiro.eu](http://www.enfiro.eu)

<sup>3</sup> CBUF - Combustion Behaviour of Upholstered Furniture <https://www.sp.se/en/index/research/CBUF/Sidor/default.aspx>

<sup>4</sup> some projects relevant to fire safety are funded under Horizon 2020 SME instrument, or under other themes such as recycling

<sup>5</sup> [http://europa.eu/rapid/press-release\\_IP-18-4041\\_en.htm](http://europa.eu/rapid/press-release_IP-18-4041_en.htm)

## COMMUNICATION & ADVOCACY

### 1. INFORMATION HUB ON FLAME RETARDANTS AND FIRE SAFETY

The pinfa Newsletter and website [www.pinfa.eu](http://www.pinfa.eu) aim to provide a resource hub for news, information on innovation in flame retardant chemistry and new applications, regulatory and policy development updates, new studies, research reports and fire safety data and summaries of meetings and conferences, as well as a complete listing of events relevant to flame retardants and fire safety. Both the pinfa Newsletter and the pinfa website cover Europe but also developments worldwide, and particularly actions of pinfa North America.

[www.pinfa.eu/who-is-pinfa-north-america](http://www.pinfa.eu/who-is-pinfa-north-america)

[www.pinfa.eu/media-events/events](http://www.pinfa.eu/media-events/events)

The pinfa website [www.pinfa.eu](http://www.pinfa.eu) includes PIN FR product factsheets and the pinfa 'Product Selector', now improved and updated, which enables to search for which PIN FRs are adapted for different polymers and applications, with information on regulatory status and pinfa member suppliers. Our Product Selector is open to any company willing to submit information on known PIN flame retardants.

In 2018, pinfa transferred our website to a new software system, to improve flexibility, to integrate the pinfa Newsletter emailing system, and to ensure GDPR conformity (EU General Data Protection Regulation).

The pinfa Newsletter is open to any relevant information, from pinfa members and others, and we welcome your news, for example on new uses of PIN flame retardants in new materials or product applications, R&D publications or meetings and events. You are welcome to send any information to [pinfa@cefic.be](mailto:pinfa@cefic.be).

### 2. POSITIVE ADVOCACY: HOW PINFA WORKS WITH STAKEHOLDERS

Pinfa works in partnership with stakeholders (NGOs, environmental, consumer associations, scientists, regulators, fire safety experts, user industries...) to ensure safe use of flame retardant products. For several years, pinfa has been integrating the feedback of the fire safety stakeholders in its roadmap to promote fire safety and the use of safe flame retardants.

Pinfa has been participating to the FIEP (Fire Information Exchange Platform) since its inception in 2016. Aiming at creating a hub for data exchange on fire, this organisation is a unique pan-European kind of collaboration between all stakeholders: fire testing institutes, academia, civil society, national regulators, firefighters and of course, industry.

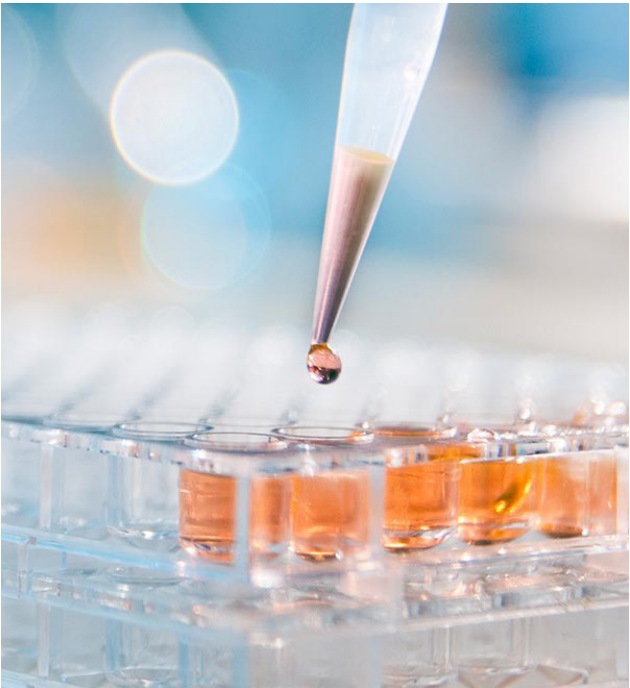


The pinfa Newsletter is published monthly by email (free): subscribe at [www.pinfa.eu](http://www.pinfa.eu).

In recent years, there has been much debate about FRs. There have been concerns raised about environmental impacts, largely but not solely about halogenated FRs. In cases where FR use is decreased, there are concerns about fire safety. Where are FRs critical for fire safety, where can other solutions be sufficient? For pinfa, these are important questions. As producers and users of PIN FRs, we do not only see the concerns about halogens as our opportunity to provide substitutes. We also see it as our responsibility to develop alternative chemicals, ensuring we are providing sustainable products into the future.

Through our experience in PIN FR development and application, we can contribute to the discussion, but we do not have all the answers. Experts in fire safety need to come together with experts in chemical health and safety, environment and consumer groups, firefighters, and designers and implementers of fire safety standards. In this context, pinfa is holding several meetings to bring together a small group of individuals who can help each other think through some of the key questions on FRs. Each will bring relevant expertise in their field, but also a willingness to listen to others. And rather than just being a ‘talking shop’, pinfa writes up the outcomes of the discussions under the Chatham House Rule, and use them to plan a way forward (when a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any participant, may be revealed).

In 2018, our advisory board gathered approximately 40 participants in two meetings, with constructive participation and input from very different profiles: firefighters, academic professors in fire safety science, representatives of environmental NGOs, Member of the European Parliament, Director at the European Commission, National EPA regulators, etc.



**ACCORDING TO THE PINFA CHARTER, OUR ORGANISATION COMMITS TO:**

- 1. Building on existing chemical assessment systems, addressing data gaps and improving assessment of exposure.**
- 2. Accepting that FRs are generally persistent in order to be durably effective, and investigating the best ways to manage this while retaining their effectiveness and usefulness.**
- 3. Accepting that FRs may have acute Hazard Phrases, and investigating ways to minimise exposure while ensuring they do their important job.**
- 4. Taking into consideration the full life cycle (production, disposal, biodegradation).**
- 5. Taking into account release risk.**
- 6. Developing appropriate criteria for assessing the safety of inorganic flame retardant components (existing criteria are largely designed for organics).**

**3. CONTRIBUTING TO RESPONSIBLE CHEMICALS POLICY**

**pinfa followed closely regulatory developments in 2018, in the spirit of our members’ common vision “of continuously improving the environmental and health profile of their flame retardant products” including:**

- ▶ Final REACH registration deadline, June 2018, for substances <100 t/y production.
- ▶ ECHA establishment, on request of stakeholders, a list of all chemicals indicated as flame retardants by one or more REACH registrant.
- ▶ ECHA public consultation on possible restriction of chlorinated P-ester FRs
- ▶ 2018 additions to ECHA CoRAP list (Community Rolling Action Plan): RDP tetraphenyl resorcinol bis (diphenylphoshate)
- ▶ Inclusion of ‘Red phosphorus’ on ECHA compliance check list
- ▶ EU study launched to assess possible additional substance restrictions under the RoHS Directive (Restriction of Hazardous Substances), with under consideration antimony, bromine and chlorine substances <http://rohs.exemptions.oeko.info/index.php?id=289>
- ▶ Stockholm Convention addition of DecaBDE to POPs ban list (Persistent Organic Substances)
- ▶ EU Parliament discussion on tighter limits for POPs (including certain brominated FRs in recycled plastics)
- ▶ ChemSec alternative chemicals substitution tool <https://marketplace.chemsec.org/articles/news/2018/09/20/substitute-it-now-with-this/>
- ▶ EU Ecodesign criteria proposals for display screens, proposals to exclude brominated FRs and document all parts containing flame retardants
- ▶ EU-funded LIFE FLAREX project assessing alternative flame retardants [www.life-flarex.eu](http://www.life-flarex.eu)
- ▶ EU GPP (Green Public Purchasing) criteria for furniture: draft proposal recognises fire safety, rejects exclusion of all flame retardants and proposes exclusion of SVHC substances (Substances of Very High Concern, such as certain halogenated FRs: SCCPs, HBCDD, DecaBDE, Dechlorane Plus) [http://ec.europa.eu/environment/gpp/pdf/toolkit/furniture\\_gpp.pdf](http://ec.europa.eu/environment/gpp/pdf/toolkit/furniture_gpp.pdf)
- ▶ alternative chemical substitution strategies: ECHA, Sweden.
- ▶ CEN (European Standards Organisation) project on sustainable chemicals in the circular economy
- ▶ EU human biomonitoring programme (HBM4EU) identification of 20 flame retardants to be assessed, including halogenated FRs and seven non-halogenated phosphorus esters
- ▶ European “Safe Chemicals Innovation Agenda”





#### 4. ENGAGING AND COMMUNICATING IN EXTERNAL EVENTS

Throughout 2018, pinfa engaged with stakeholders, industry specialists and decision makers by active participation in a range of meetings and conferences, and by organising specific targeted workshops. pinfa participants and speakers included both directly pinfa Secretariat and representation by pinfa member companies.

pinfa's active contribution at events also includes summarising key presentations or outcomes in the pinfa Newsletter, for example FRPM 2017 (Flame Retardant Polymeric Materials) and AMI Fire Resistance in Plastics Conference 2017 in pinfa Newsletters n°s 89 and 88 published in early 2018. The pinfa Newsletter n°88 summary of the FRiP conference includes a number of interviews of compounders and other companies, outlining their vision for PIN flame retardant developments and needs: Gabriel-Chemie masterbatches, TESA adhesives, Ecodek wood-polymer composites, Armacell PET foams, BASF insulation foams, LEONI automotive cables, Prominvest cable compounds.

Contacts with research are important to pinfa, to keep up to date with and input to new developments, and pinfa actively participated at the Nordic Fire Safety Days (pinfa Newsletter n°93), ECOFRAM (International Conference on Eco-Friendly Flame Retardant Additives and Materials) (n°91), ESFSS (European Symposium on Fire Safety Science) (n°95). An important message is the need for research to consider the ecotoxicity /

toxicity potential of proposed new FR molecules, and not just only fire and materials performance.

Dialogue with the flame retardant and user industries is achieved both by active participation at key conferences and through pinfa workshops. At the AMI Fire Resistance in Plastics (FRiP) Cologne 2017 pinfa organised, for the first time, a panel discussion, addressing smoke toxicity based on the first CREPIM commissioned by pinfa (pinfa Newsletter n°88). This is followed at FRiP 2018 by a panel with R&D institutes and industry specialists on PIN FRs in recycling. pinfa also spoke at a range of events addressing recycling of plastic materials and flame retardants, such as the IERC 2018 (International Electronics Recycling Congress, Salzburg) and the IARC 2018 (International Automobile Recycling congress 2018, Geneva), and the Safe chemicals innovation agenda workshop in Vienna. Pinfa also organised specialist sessions at NPE (National Plastic Exposition) / ANTEC (Annual Technical Meeting of the Society of Plastics Engineers) (n°93), a workshop on automotive fire safety (with SAMPE (Society for the Advancement of Material and Process Engineering) (n°90).

Full listing of fire safety and flame retardant conferences and information about pinfa and pinfa-na workshops: [www.pinfa.eu/media-events/events](http://www.pinfa.eu/media-events/events)

## Pipeline for 2019

In 2019, pinfa will turn 10 years old. Empowered with a global network and a growing number of members, pinfa is now one of the leading stakeholders working on non-halogenated flame retardants solutions. While the momentum of the PIN flame retardants industry is confirming the market appetite for PIN FRs, great challenges are ahead of us. A watershed year, 2019 will see a new Parliament and a new Commission being

appointed, thereby reshuffling policy priorities for the next five years. Thus, pinfa will strive to ensure fire safety gets the spot it deserves on the political agenda. To achieve this, pinfa plans to develop its network of trusted stakeholders. Coalition with other responsible, transparent and sustainable organisations will also be the bedrock of pinfa's action in 2019.

ON TOP OF THIS HIGH-LEVEL AGENDA, PINFA WILL KEEP WORKING ON DEDICATED PROJECTS TO ENSURE PROGRESS IN AREAS THAT ARE ESSENTIAL FOR OUR MEMBERS.



#### ELECTROMOBILITY

following the success of the first workshop organized in China, the workstream on electromobility & flame retardancy of materials is to further develop, with a focus on Japan (Q3) and EU (Q4) for 2019. End-of-life cycle and recycling matters should become the main topics.



#### RECYCLING & CIRCULAR ECONOMY

in 2019, pinfa will intensify its work on circular economy & recycling of PIN flame retarded plastics, extending contacts engaged in 2018 with a number of major EU projects on plastics and fibres recycling, with support to the Unravel project and organisation of a joint pinfa-AIMPLAS workshop in April.



#### A STATE OF THE ART OF HALOGEN-FREE FLAME RETARDANTS INITIATIVES

there are many initiatives pushing to substitute halogenated flame retardants (including Antimony trioxide). Pinfa aims at working on a consolidated list of existing initiatives in 2019.



#### SMOKE TOXICITY STUDY FOLLOW-UP

after the initial literature study which was valuable in contacts with policy makers and while the smoke toxicity study driven by Crepim got the interest of the members, 2019 will be dedicated to disseminate the results and ensure their acknowledgement on the international stage.



# Interview with Laurent Tribut Schneider Electric

New associate member of pinfa in 2018

**Q: Schneider Electric is a leading company in E&E, one of the sectors that experiences a momentum on the use of PIN Flame Retardants. Is it possible to go completely halogen free for E&E flame retardant solutions, in your opinion?**

E&E products are mainly using flame retarded materials to ensure a great behavior in case of flame ignition induced by electrical fault. Halogen based materials are known from decades to be highly performant and cost efficient but ROHS highlighted the noxiousness of first generation of halogenated flame retardant twenty years ago and more recently some chlorinated and brominated flame retardants were included in Reach SVHC list and the whole BFR/CFR families were included in criteria 3 list of IEC 62474 database. In addition, Schneider Electric is receiving market requests for Halogen Free products from some part of the world and mainly from Europe. Also, Schneider Electric is considering the possibility to replace halogenated flame retardant based materials by non-halogenated alternatives when the technical solution does exist to avoid expensive qualification of materials which may face restriction in the future. These alternatives are slowly improving since the beginning of century but, in some cases, the alternatives are still facing some drawbacks in term of cost, brittleness or corrosivity. R&D studies are still required to improve the substitution and find breakthrough solutions based on synergetic effects or mix of technologies instead of incremental innovation

**Q: Within pinfa, you represent Schneider Electric as a plastics material and standardization expert. What are the main challenges in standardization of materials for fire safety?**

The standardization work related to fire safety is rarely directly dedicated to materials as such but focused on technical assessment of performances. The only material

related topic, I had to work on in the past years, aims at defining halogen free materials for Cable Management System products. This definition was missing and unfair competitors did happen especially in Scandinavian countries. A new EN 50642 was published this year with 100% positive votes and solved this issue.

**Q: Schneider Electric is active in more than a hundred countries. How would you describe the specificity of the European market, from a fire resistance point of view?**

Some European countries are more demanding of halogen free products such as Nordic countries, some German landers or Austria in comparison with the rest of the world. Reach is additionally restricting some categories of flame retardants on the European market even if China is following closely. Finally, the pressure on recycling and/or reducing plastics waste seem to be higher in Europe from the authority's side than in other regions of the world.

**Q: 2018 brought developments on emobility & FRs, on smoke toxicity tests and on other regulatory activities. According to you, which topics should be prioritized by pinfa for the following years?**

PINFA should consider not only the fire performance of the flame retarded materials (flame propagation, smoke production, heat release...) but more generally all their peripheral properties: dielectric performance, ageing behavior, corrosivity ... to highlight their advantages in comparison with halogenated materials. End of life starts also to be critical and circular economy will be a key topic in 2019. Thus, the impact of PINFA flame retardants on the recyclability of materials will probably have to be deeply analyzed. Finally, breakthrough effects like ceramization or multiplayers intumescence could be promoted as alternatives to bulk chemistry.

## MEET THE TEAM



**Dr Adrian Beard**  
Chairman of pinfa

Adrian Beard works for Clariant Corporation, Hurth near Cologne in Germany, as Head of Marketing and Advocacy for the Flame Retardants Business Line of the Business Unit Additives. On top of his Clariant position, Adrian has been the Chairman of pinfa since November 2016.

He is also a senior expert in fire safety and environmental properties of phosphorus based flame retardants. From 1991 to 1999, before joining Clariant, he was head of the environmental analytical laboratory at the Fraunhofer-Institute for Environmental, Safety, and Energy Technology in Oberhausen, Germany. He holds a doctorate in analytical chemistry from the University of Waterloo, Ontario, Canada and a diploma in geo-ecology from the University of Bayreuth, Germany.



**Stephanie Jacques**  
Assistant of pinfa

Stephanie is a sector group assistant for both the Specialty Chemicals and Product Stewardship departments of Cefic. She has been in charge of handling all administrative tasks for pinfa since May 2018 and reports directly to Jonathan Crozier.



**Jonathan Crozier**  
Secretary General of pinfa

Jonathan is a sector group manager for the Specialty Chemicals department of Cefic, the European Chemistry Council. Since February 2018, Jonathan has been in charge of pinfa, reporting directly to the executive committee. Jonathan's role includes coordination of the advocacy strategy, supervision of the members relationship and management of the projects undertook by pinfa.

Between 2010 and 2017, Jonathan worked in Brussels' European bubble, in Public affairs and Communications positions. A political scientist by training, Jonathan has 8 years of experience in EU affairs and a Masters in European Public Affairs from Sciences Po Grenoble, France.



**Chris Thornton**  
Consultant to pinfa  
Communications

Chris Thornton writes the pinfa Newsletter, which provides monthly information on PIN flame retardants and fire safety. He has been working with the flame retardants industry in Europe since 2001 on information and Newsletter communications, fire safety, life cycle analysis, eco-labels, smoke toxicity and other flame retardant environment and health challenges. He is British born, now living in France. His other activities include sustainable management and recycling of phosphorus.



# PINFA NORTH AMERICA

Since its inception in 2012, PINFA North America has been an active, growing industry organization providing technical information while engaging local stakeholders in dialogue concerning alternative and sustainable flame retardant solutions. We added two new member companies in 2018—Lanxess and Technical Fibre Products.

Fire safety in North America region is a topic of great importance. The increasing prevalence of devastating wildfires in the western United States and other fire events has caused loss of human life and property. Building and residential fire safety codes are being questioned and will be re-evaluated as the public seeks improved protection from catastrophic fire events. In contrast to this; there has been some recent efforts underway by NGOs and local government bodies to lessen fire safety standards for some applications (e.g. furniture, mattresses, insulation) in order to eliminate certain flame retardants with an inherent undesirable environmental and health profile.

PINFA-NA had an election in 2018 and change in leadership during 2018. Tim Reilly of Clariant assumed chairmanship. Marc Lebel (President and CEO of FRX Polymers) served as chairman since the organization's inception in 2012. Margaret Baumann of FRX Polymers had assisted in the establishment and growth of Pinfa NA. She has now assumed the role of Vice Chairman and Outreach Chair along with Robert Weiler of Amfine/Adeka who is also Vice-Chair (Technical Program). Rounding out the PINFA-NA organization board leadership positions include Keith Sorrel of Huber (Treasurer), Scott Klopfer of Technical Fibre Products (Membership) and Debbie Wagner (Administrator). The companies comprising PINFA-NA membership include: Amfine/Adeka, A. Schulman, Clariant, Sojitz/Daihachi, FRX Polymers,

Huber, Lanxess, Nabaltec, Polyone, Scott Bader and Technical Fibre Products. During April 2018, PINFA-NA in conjunction with two co-sponsors held its fifth annual industry day workshop in Dearborn, Michigan USA. The event entitled "Meeting Changing Material Flammability Requirements for Ground Transportation" was held at the historic Dearborn Inn built by the founder of Ford Motor Company – Henry Ford. The focus of this forward looking workshop concerned fire safety needs for hybrid and electric vehicles. Meeting participants also toured the nearby Ford truck assembly plant. At this time, PINFA-NA is actively planning its 2019 conference focused on "Design for Fire Safety in Greener Electronics". The event location will be in San Jose, California USA in the heart of Silicon Valley.

PINFA-NA's Outreach efforts under Maggie Baumann's lead continue in full swing. During 2018, Pinfa NA participated in numerous trade shows (including NPE/ANTEC and CAMX) and hosted two panel discussions at major industry conferences. Most recently (November 2018), PINFA-NA was present at Greenbuild 2018. This is the key trade show for sustainable building & construction within North America. Additionally, PINFA-NA had a well-attended membership meeting in Cleveland, Ohio USA during October 2018. PINFA-NA members brainstormed and agreed upon actions for 2019 and beyond in order to extend its outreach efforts within the region.



# MEMBERSHIP

## FULL MEMBERS PRODUCERS OF PIN FLAME RETARDANTS



## ASSOCIATE MEMBERS USERS OF PIN FLAME RETARDANTS



pinfa is open to all companies producing or using PIN flame retardants, as full or associate Members respectively. For further information, please contact **jonathan Crozier: [jcr@cefic.be](mailto:jcr@cefic.be) +32 0499825789**

### FULL MEMBER

Any producer of Phosphorus, Inorganic and Nitrogen flame retardant chemicals shall be eligible for membership. The membership includes a company's subsidiaries and joint ventures.

### ASSOCIATE MEMBER

Associate membership is open to other related technologies, e.g. FR synergists or companies using Phosphorus, Inorganic and Nitrogen flame retardant chemicals (i.e. formulators, blenders, distributors, agents, end users, etc.).



Members of pinfa share the common vision of continuously improving the environmental and health profile of their flame retardant products. This vision is coupled with a commitment to maintain high fire safety standards across the world, standards which minimize the risk of fire to the general public.

**pinfa**

Phosphorus, Inorganic & Nitrogen Flame Retardants Association



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