Flame Retardants: Integral to Fire Safety

Industry Perspective: Flame retardants contribution to fire safety in textiles Future Trends

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Responsible Care
OUR COMMITMENT TO SUSTAINABILITY

cefic sector group

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- Flame Retardants (FR) in Cefic
- Organisation
- FR Applications
- FR Contributions to Fire Safety
- Some Myths and Facts
- Legislative Status
- Future Trends

Flame Retardants in Cefic

cefic

FLAME RETARDANTS

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EFRA

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Flame Retardants Integral to Fire safety
European Flame Retardants Association

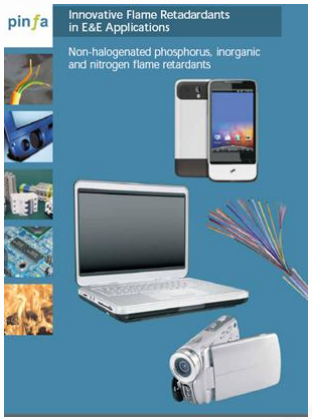
pinfa
Phosphorus, Inorganic & Nitrogen Flame Retardants Association

Manager : Philippe Salémis

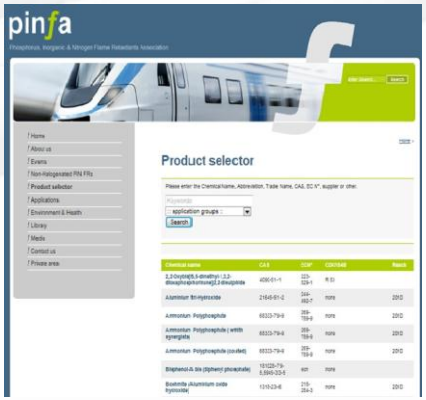
Phosporous, Inorganic & Nitrogen Flame Retardants Association

Documentations see www.pinfa.org

Brochures to support and to help understanding why Fire Safety is important and needed in modern life with modern products



- **E&E: Electronic and Electric (use of FR in the different E &E appliances**
- **Transport : FR in transport**
- **B&C : Building and construction (to come soon)**



Product selector showing FR possible applications and producers

Websites : www.pinfa.eu

European Flame Retardant Association

- A sector group of Cefic, the European Chemical Industry Council
- Trustworthy voice of the flame retardant industry in Europe
- Aligned to the industry it serves and organized in Applications Forums:
  - ✓ Upholstered Furniture and Textiles (UF&T)
  - ✓ Electrical and Electronic Equipment (E&EE)
  - ✓ Buildings and Construction
  - ✓ Transportation

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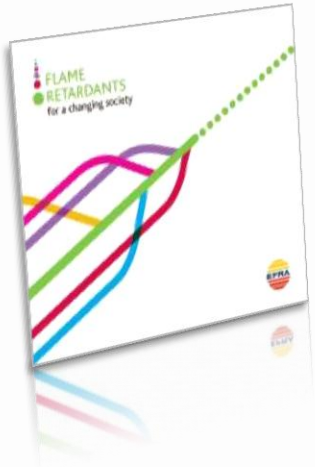
Documentations

see www.flameretardants.com or www.cefic-efra.com

Brochures to support and to help understanding why Fire Safety is important and needed in modern life with modern products



"Flame Retardants for a changing Society"

- **overview about the variety of flame retardants usages** in everyday life,
- **and their contribution** to the evolutions of consumer products, construction products and transports over the past few decades.

- E&E (Electronic & Electricity)
- UF&T (Textiles & Furniture
- B&C (Buildings & Constructions
- Transport (to come soon)

Website : www.efra-cefic.eu

Flame Retardants Debate

Flame Retardants ?!
What are they ?
Where are they ?
What do they do ?
Why Flame Retardants ?
Needed or not needed ?
Useful or not ?
Bad or Good ?
……

Devil ?
Angel ?
????
Friends or
Foe ?

Debunking the myths

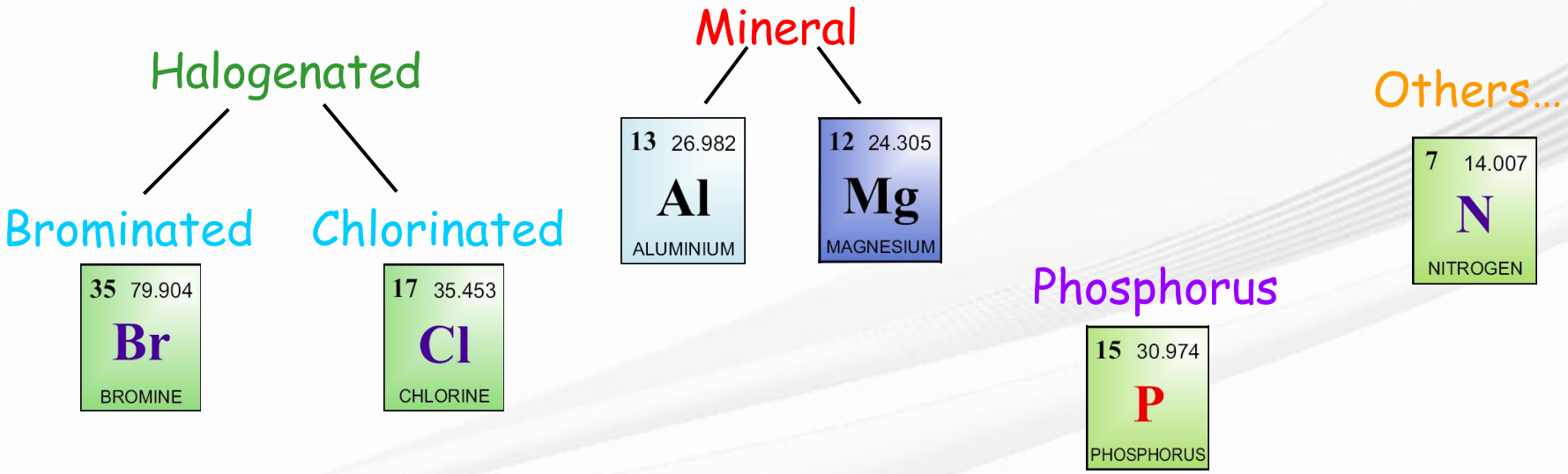
- Myth#1: Flame retardants are a single class of chemicals
- Fact: Flame retardants belong to several widely divergent classes of chemicals

- Myth #2: Flame retardants do not work
- Fact: Flame retardants have been proven to work effectively in many different applications

- Myth #3: Plastics with flame retardants cannot be recycled
- Fact: Flame retarded plastics can be recycled

- Myth #4: Flame retardants release toxins in a fire
- Fact: Toxins are released in any uncontrolled fire

Common Flame Retardant Classes



- Based on natural elements
- There are many different flame retardants in each of these classes
- Each individual flame retardant has it's own unique set of environmental, human health, physical, and chemical properties
- The distinct nature of individual flame retardants requires that each be treated on it's own merits

FR's Application / Uses

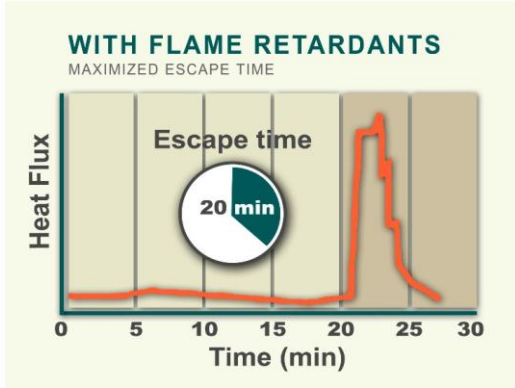
- Flame Retardant's Application range
  - Adhesives
  - Thermoplastics
  - **Foams (PE, PS, PU,…)**
  - **Textiles**
  - Paints / coatings
  - Thermosets
  - Wire & cables
  - Electronic circuit board
  - Electronics in general (TV Cabinets…)

- Sector of application
  - Computers, Buildings Insulation, Trams, Car, Buses, Planes, Seats, Armchairs, TV, Cables…

>> Protecting us in our daily life

Benefits of Flame Retardants

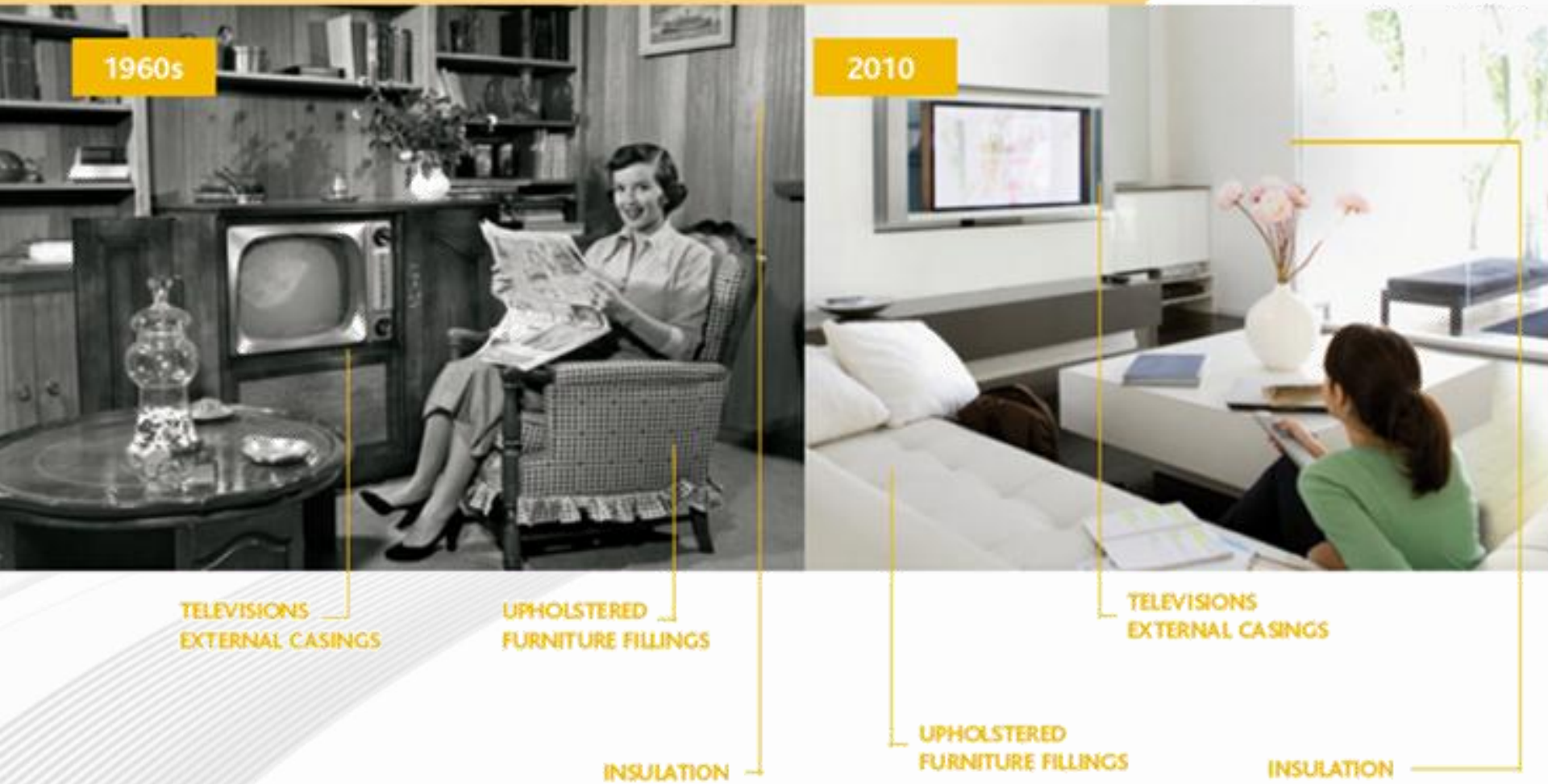
- Reduce the impact fires have on people, property and the environment
- FRs significantly delay ignition in the early stages and therefore:
  - **allow for longer escape and response times**
  - **provide increased survival chances**
  - **provide additional time for the fire brigade to reach the fire**
- Flame retardants are added to different materials or applied as a treatment to materials such as textiles and plastics
- The European Commission has estimated a 20% reduction of fire deaths as a result of the use of flame retardants
- Disparity of standard for domestic fire safety standards in Europe



Flame retardants and public spaces

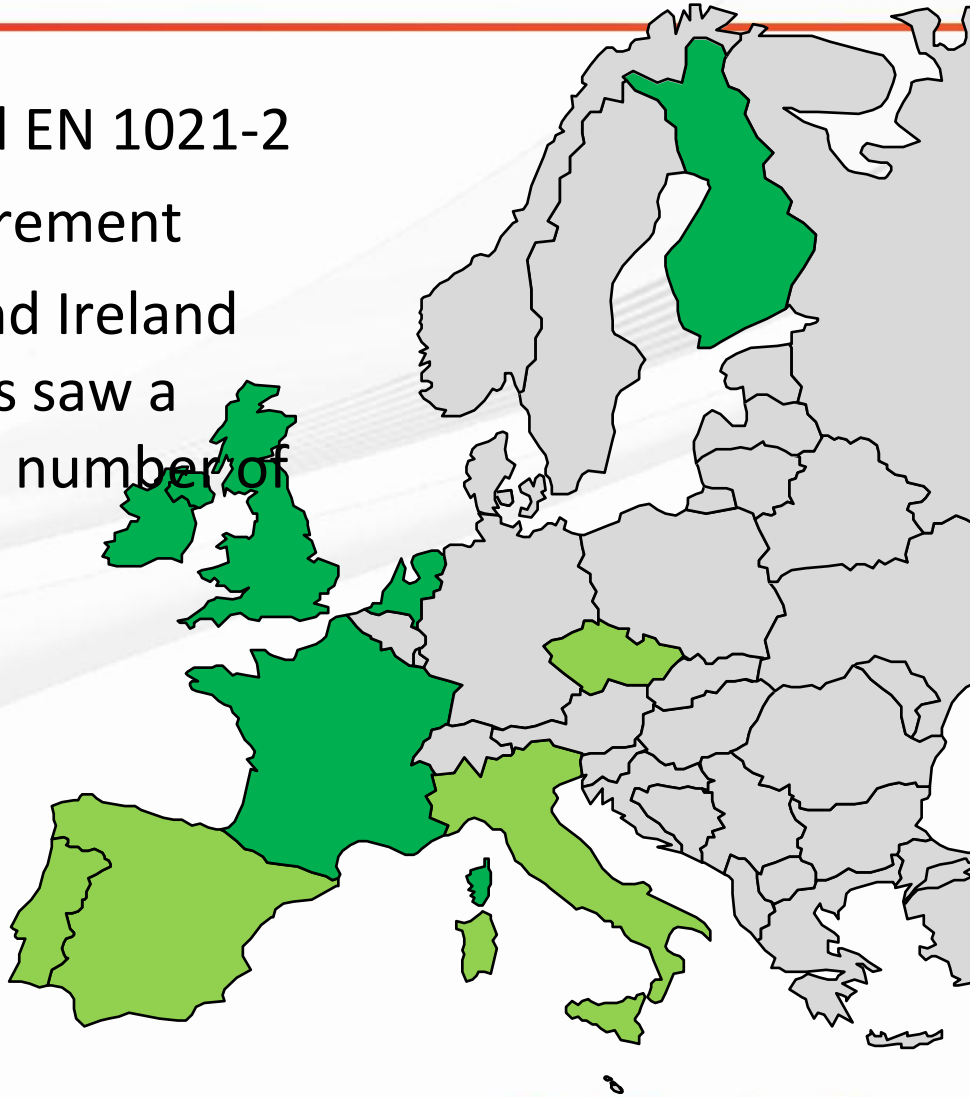
- Modern polymeric materials can be far more flammable than natural based materials (wood, cotton)
- Many E&E devices contain between 1 to 9kg of plastic materials which in terms of fuel load would be the equivalent of 0.6 to 6 liters of gasoline
- Domestic fires still account for 80% of injuries and deaths; so fire safety in modern homes and public spaces is vital
- Flame retardants technologies become an important component in products to slow down the spread and reduce the incidence of fire in modern homes and public spaces
- Increased use of insulating material to ensure energy conservation

Flame retardants and modern homes



Overview: textile flammability requirements

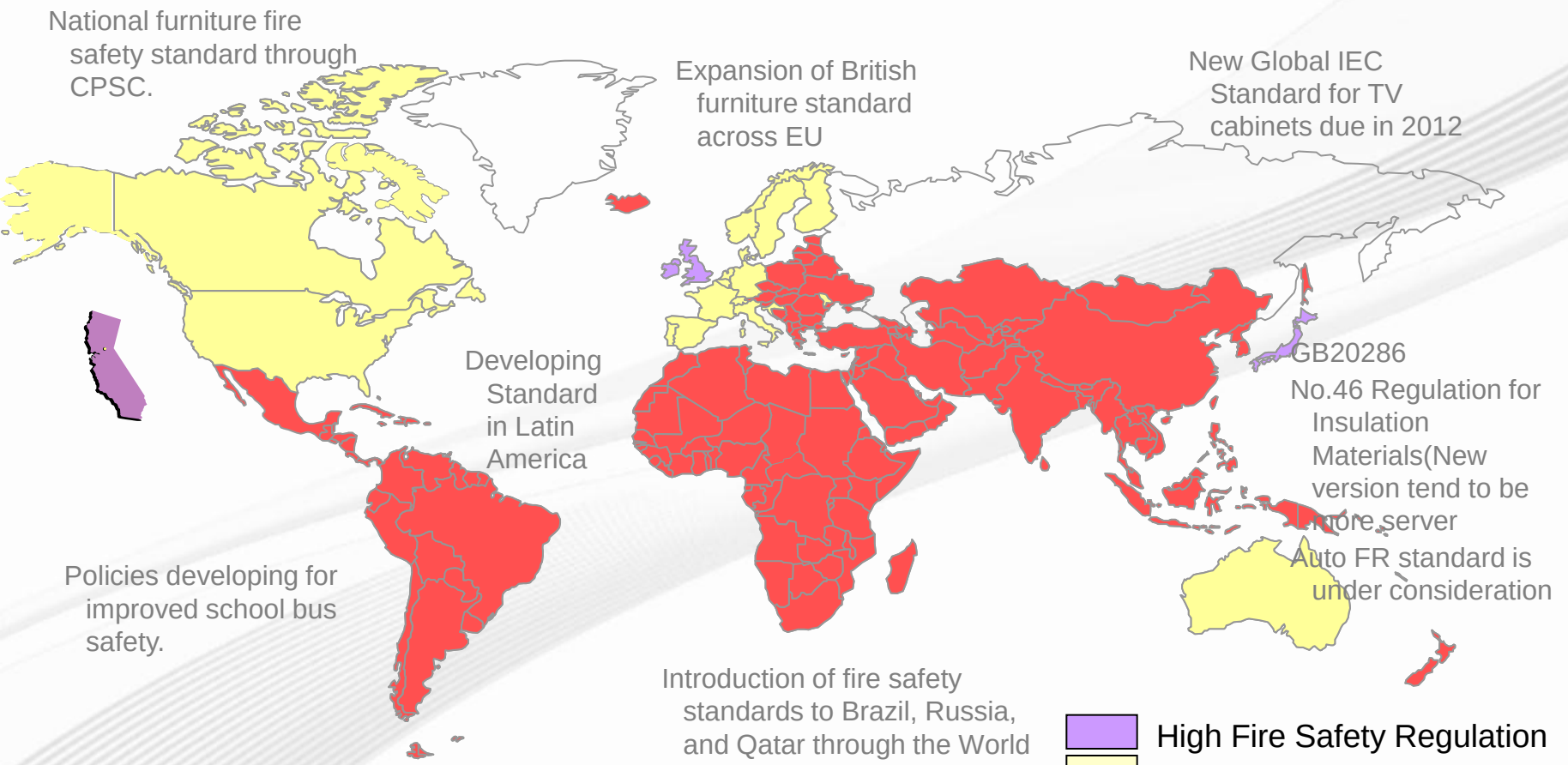
- CEN standards EN 1021-1 and EN 1021-2
- No EU wide mandatory requirement
- Fire safety standards in UK and Ireland introduced in the late eighties saw a considerable reduction in the number of fire fatalities and injuries



Public & Domestic

- Public

Fire Safety Standards
Trend - More Regions & Higher Standards



FR role as a tool to meet fire safety standards

- Flame retardants are a well-proven tool to stop to prevent fires from starting, or spreading. They can significantly delay ignition in the early stages of a fire when it can still be extinguished, or occupants of a building can escape.

- Materials and products which need to be rendered fire-safe differ widely in their nature, their composition – and indeed their application

- Flame retardants help producers meet these application specific flammability requirements

HBCD: Decision at UNEP Stockholm Convention

- COP6 May 2013 decided to list HBCD in annex A (elimination) with *[conditional]* specific exemptions (up to 5 years) for production and use in EPS and XPS in buildings
  - Parties must **register intention to use the exemption**
  - Each Party that has registered for the exemption "shall take necessary measures to ensure that the EPS and XPS containing HBCD can be easily **identified by labelling or other means throughout its life-cycle**"
- The Basel Convention was requested to begin work on HBCD containing waste

Note: Once the listing enters into force, HBCD may not be used for any application other than EPS or XPS foam in buildings. HBCD will not be allowed in other construction uses or textiles or electronics products

HBCD UNEP listing: now what?

Stockholm Convention

- The new decision is expected to enter into force in October 2014:
  - Parties have to implement and amend their national regulations, including registering for exemptions. If a party does not register for the exemption, HBCD production or imports will not be allowed in this country (or region).
  - Parties can apply for the exemption for a maximum of five years following the entry into force of the decision. **No exemption after October 2019** (unless Parties allow a renewal for emerging economies).

HBCD UNEP listing: now what? (2)

Basel Convention

- Following Stockholm Convention listing, Technical Guidelines related to the Environmentally Sound Management of HBCD and HBCD containing waste will be developed by China

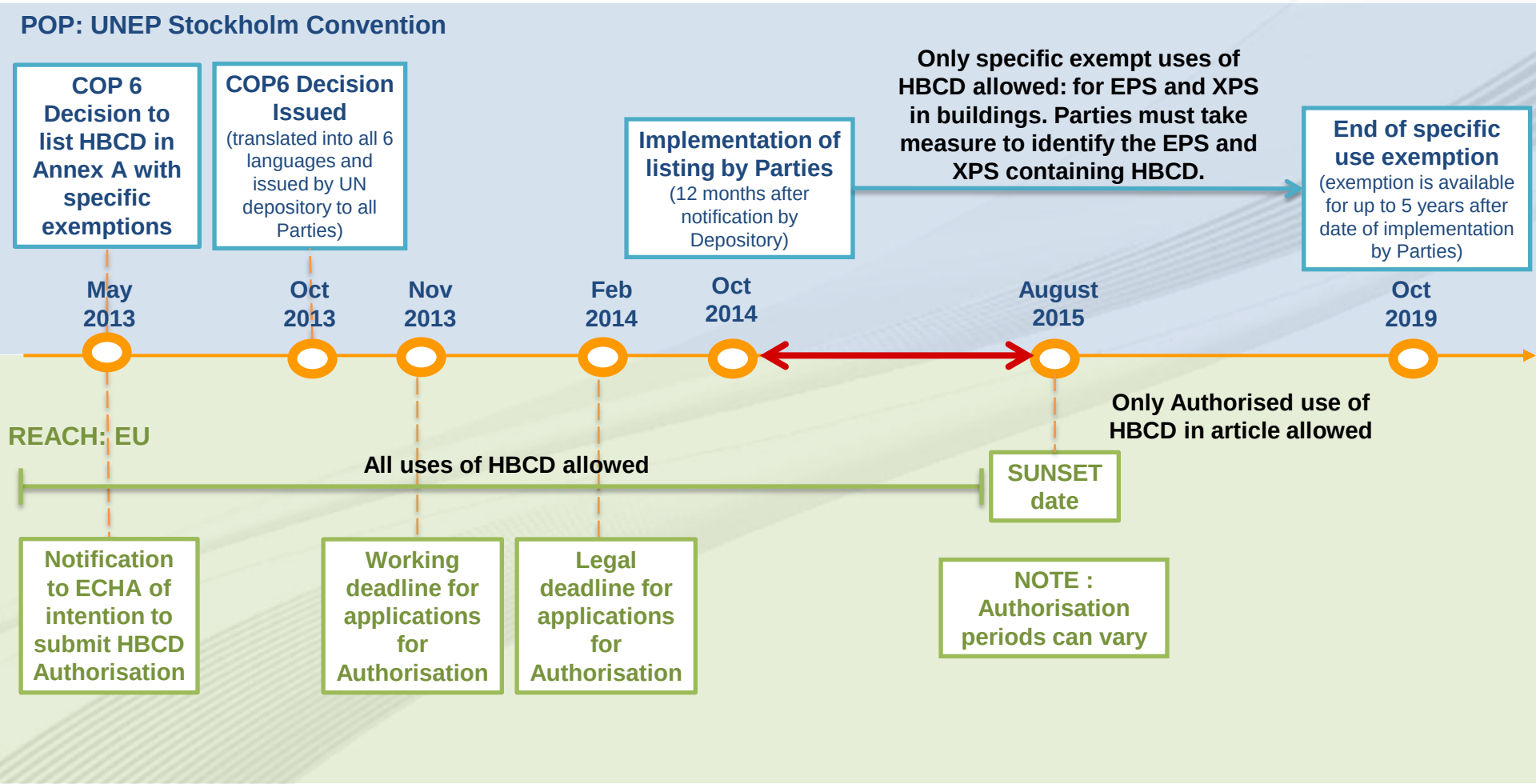
Rotterdam Convention

- Expect a future listing with limitations for transport of HBCD

EU Implementation

- Gap between entry into force of the UNEP Stockholm Convention decision and EU REACH "sunset" date (21 August 2015). The European Commission is reviewing how to address this gap. One possibility is to delay implementation of POP listing in the EU until after the Sunset date.

EU & UNEP listings: timing comparison



Note: A consortium of EPS producers has been set up to seek authorisation for the continued use of HBCD in EPS insulation beads.

Alternatives to HBCD

- Alternatives to HBCD in textiles and High Impact Polystyrene (HIPS) are available on the market

Other examples

- (Alternatives to HBCD in polystyrene insulation foams have been identified and are available on a commercial scale)

UN: Deca-BDE nominated as candidate POP

- On 27 May 2013 Norway submitted a proposal to nominate commercial Deca-BDE as a Persistent Organic Pollutant (POP) under the UNEP Stockholm Convention.
- Norway has proposed that commercial Deca-BDE be listed in Annex A of the Stockholm Convention as a substance for elimination
- The proposal will be discussed by the POP Review Committee (the technical experts) at their next meeting in Rome, 14–18 October 2013.
- POPRC will discuss if the content of the dossier shows that Deca-BDE fulfils the POP screening criteria in Annex D of the Convention (this is known as the screening phase)
- The screening phase is the first step in a process that takes several years
- If Deca-BDE is found to meet the criteria, the decision to list it in the Stockholm Convention will be taken in May 2017 at the earliest
- The implementation of such a decision into national law could be expected end of 2018 at the earliest

EFRA does not believe the Norwegian proposal demonstrates that commercial Deca-BDE meets the screening criteria

- *Note:* In the US and Canada a voluntary phase out of the production, import & sales of commercial Deca-BDE will apply from end 2013.

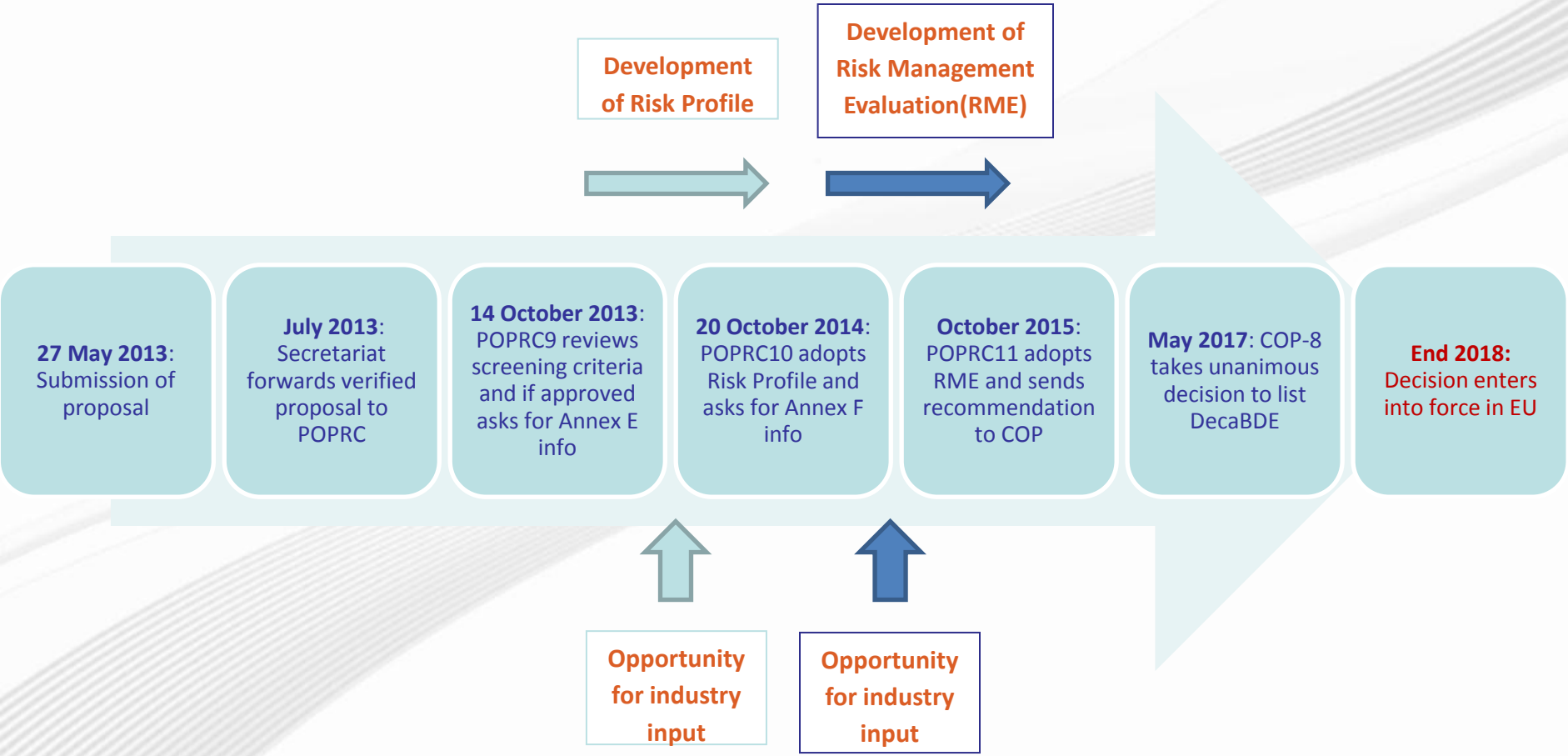
UN: EFRA Position on Norwegian Nomination

- Based on the studies presented in the proposal, there is insufficient evidence that commercial Deca-BDE meets the screening criteria as outlined in Annex D.

- EFRA believes that the current dossier does not provide a sufficiently sound basis for approval of the screening criteria

- EFRA respectfully calls upon POPRC members to consider that the dossier, as it stands today, does not fulfil the screening criteria and does not justify the development of a risk profile.

UNEP POP listing Process (earliest timing possible)



Trends Alternatives

- The industry is committed to further innovation capabilities of flame retardants to address the future needs of customers and increase standards of sustainability, performance and safety

- The trend is towards the development of polymeric and reactive flame retardants

- For information on alternatives please contact individual companies

Flame retardants are safe and essential

- All chemical substances on the European market over 1 tonne per annum are subject to regulation under REACH meaning that potential environmental and human risks are to be thoroughly assessed by industry registrants

- More than 90% of all commercial flame retardants fall into the volume band of >100mt annually and have been duly registered under REACH

- There are more than 140 different substances that provide flame retardant properties - only a limited number of these substances have been restricted in 35 years

- Full cooperation with the European Commission, ECHA and other stakeholders to create a safe environment for consumers

- Findings in the environment are at such low levels that there is a reasonable certainty of no harm

Questions?

Thank You !

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