



Burning Questions

ENFIRO 2-day workshop 7-8 November Brussels

A workshop on alternative flame retardants looking at flammability, applications, toxicity, exposure and life cycle assessment

Scientific program, Wednesday 7th of November

- 8.30 [Registration at Silken Berlaymont Hotel, Brussels](#)
- 9.00 [Welcome and opening](#) (Pim Leonards)
- 9.15 [Keynote](#)
Status and trends of fire safety regulations and standards in the fields building, electrical engineering & electronics as well as transportation (Jürgen Troitzsch, FEPS)
- 10.00 Highlights of the ENFIRO project: assessment of alternatives for specific brominated flame retardants (Pim Leonards, VU University)
- 10.30 Coffee break

Session 1: Prioritization and selection of viable flame retardants

Chair: Pim Leonards

- 11.00 Regulatory challenges for brominated flame retardants (Stefan Posner, Swerea IVF)
- 11.30 Results of US EPA alternatives assessment for decabromodiphenyl ether (Emma Lavoie, EPA)
- 12.00 Greenscreen for safer chemicals: using chemical hazard assessment to evaluate chemical alternatives (Lauren Heine, GPA)
- 12.30 Lunch

Session 2: Flammability and product evaluation

Chair: Adrian Beard

- 13.30 Compounding and testing of UL-94 optimised polymer formulations containing brominated versus halogen-free flame retardants (Jeremy Pearce or Paul Cusack, ITRI)
- 14.00 Comparison of the reaction to fire of brominated versus halogen-free flame retardants in polymers (Michael Delichatsios, University of Ulster)
- 14.30 Flame retarded thermoplastics for injection moulding - mechanical properties and processability (Jonas Aspling, Swerea IVF)
- 15.00 Flame Retardants in textile coatings and printed circuit boards - performance and mechanical properties (Jonas Aspling and Per Erik Tegehall, Swerea IVF)
- 15.30 Coffee break

- 16.00 Intumescent coatings for polymers – a novel approach (Claudio Pagella, Iris Vernici Srl)
- 16.30 Recent developments in non-intumescent coatings (Sabyasachi Gaan, EMPA)
- 17.00 New developments in flame retardancy of bio-based polymers and composites (Sophie Duquesne, UMET)

- 17.30 Transfer to BOZAR for evening events:
- 18.00 Reception
- 18.30 ENFIRO film premiere “Burning Questions”
- 19.00-22.00 Dinner





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Session 3: Toxicity and exposure

Chair: Cynthia de Wit

- 9.00 Recent developments in human hazard and risk assessment of brominated and organophosphate flame retardants (Martin van den Berg, Utrecht University)
- 9.30 Neurotoxicity of alternative flame retardants (Hester Hendriks, Utrecht University)
- 10.00 Aquatic ecotoxicity and aerobic biodegradation of halogen-free flame retardants (Susanne Waaijers, University of Amsterdam)
- 10.30 Coffee break

- 11.00 Indoor exposure of organophosphate flame retardants to humans (Nele van den Eede, University of Antwerp)
- 11.30 Exposure to new flame retardants from indoor environments - results of air emission experiments and dust sampling (Cynthia de Wit, Stockholm University)
- 12.00 Leaching and exposure of halogen-free compared to brominated flame retardants (Sicco Brandsma, VU University)
- 12.30 Lunch

Session 4: Impact assessment of alternative FRs

Chair: Hildo Krop

- 13.30 Environmental risk minimization method based on life cycle risk assessment and alternative assessment for HBCD in products (Shigeki Masunaga, Yokohama National University)
- 14.00 Halogen-free and brominated flame retardants, from mining to recycling: the life cycle assessment approach (Niels Jonkers, IVAM)
- 14.30 Phosphorus flame retardants – State of the art and what's next (Adrian Beard, Clariant)
- 15.00 **Panel discussion:** Challenges and opportunities for alternative flame retardants

- 15.45 **Closing remarks** (Pim Leonards)
- 16.00 **Drinks**

