



The Case for Flame Retardant Free Furniture

A variety of flammability standards for furniture exist in Europe. Some standards lead to the use of hazardous flame retardants chemicals without providing a demonstrated fire safety benefit. Flame retardants may cause serious harm to human health and the environment, they prevent the EU's goal of a circular economy and impose a costly burden to furniture producers.

The signatories of this paper share and stress the same concerns about the implications from the presence of harmful flame retardants chemicals (FRs) in furniture products. More effective and less harmful ways to achieve fire safety exist and need to be evaluated.

Increasing evidence shows that an EU-action in favour of flame retardant free furniture is necessary to ensure protection of human health and the environment, and promote competition and fire safety.

HEALTH

The scientific community has identified many flame retardant chemicals as substances of concern for several adverse effects, such as persistence, bioaccumulation, toxicity, mutagenicity, endocrine disruption, and carcinogenicity.ⁱ In furniture items flame retardants are added to foam and textiles. Long-term exposure occurring in homes and offices is potentially harmful. Furthermore, exposure is not limited to direct contact with furniture as the chemicals are not bound to the foam. Flame retardants are released through normal use and settle into dust. Toddlers are at a higher potential risk as they crawl around, getting dust on their hands and in their mouths. Workers are exposed when manufacturing or handling products that contain FR chemicals. Fire-fighters suffer from the exposure to toxic fumes released from the combustion of materials containing flame retardants.

ENVIRONMENT AND THE CIRCULAR ECONOMY

Flame retardants migrate out of products and accumulate in the environment. Many flame retardants are persistent and can undergo long-range environmental transport.ⁱⁱ Moreover, the use of flame retardants in furniture reduces the durability of products, resulting in a shorter product lifetime. FR chemicals in furniture also prevent an environmentally responsible end-of-life treatment. Many products containing flame retardants cannot be recycled for material reuse, thus preventing a better and greener waste handling and interfering with Europe's goal of a circular economy. Additionally, the end-of-life treatment of products containing hazardous flame retardants is from 2 to 3 times more expensive than normal waste and more dangerous due to the release of toxic fumes.

COMPETITIVENESS AND QUALITY OF PRODUCTS

Furniture producers must comply with several different flammability standards and test methods in order to place their products on the EU internal market. The different flammability

standards and bans throughout Europe are complicated to comply with and place a costly burden on the producers. A manufacturer may need to establish entire new production lines to access certain European markets. This complex system prevents the free circulation of goods and hinders competition, creating a barrier to trade in the internal market. When flame retardant chemicals are necessary in order to comply with regional or national regulations, consumers are left with a smaller range of products with lower quality, higher prices and less durability. Additionally, flame retardants are poor ingredients in furniture as the chemicals reduce the quality and comfort of the products, while imposing higher costs in production.

FIRE SAFETY

Standards that require resistance to an open flame ignition source, such as the British fire safety standards and the previous TB 117 in California, have led to intensive use of flame retardant chemicals. Open flame tests are still requested in the public and contract market for furniture in many EU Member States. The potential for negative impacts on human health and the environment from flame retardants used to meet these standards were not considered when those standards were enacted.

A high level of fire safety can be achieved in other ways. Smoke detectors, automatic sprinklers in buildings, self-extinguishing cigarettes and candles, reduced smoking rates, better material combinations in furniture, and improved fire safety education all increase fire safety without potential harm from flame retardant use.

- A recent report from the French Agency for Food, Environmental and Occupational Health & Safety (ANSES) found that the contribution of flame retardants in preventing fires cannot be measured. ANSES recommends a series of other measures to reduce fires rather than exposing the whole population to flame retardant substances.ⁱⁱⁱ
- A study from ARCADIS EBRS, commissioned by DG Health and Consumers in 2011, demonstrates that “Early detection by smoke detectors is a very effective measure to deal with fires in the initial stage of development and to reduce the number of fire deaths.” while “the stringency of non-flammability requirements for consumer products in a domestic environment does not have a statistically noticeable impact on the number of fatalities from fires in dwellings.”^{iv}

Use of flame retardants in furniture may even increase production of soot, smoke, toxic gases, and other harmful combustion products in a fire.

The negative health and environmental impact is well documented:

- The [San Antonio Statement](#) on Brominated and Chlorinated Flame Retardants documents the scientific consensus about health, environmental and fire safety concerns associated with the use of these chemicals. It was signed by more than 150 scientists worldwide.^v
- A 2009 Scandinavian study found high levels of brominated flame retardants in the Arctic, in organisms ranging from zooplankton to polar bears and humans, as well as in abiotic samples such as air, soil and sediments.^{vi}
- A 2013 study by the Marine & Environmental Research Institute, measured brominated dioxins and furans - by-products of brominated flame retardants - in firefighters’ blood. The study shows that as well as being carcinogenic, many flame retardants have little effect in reducing the spread of fire, and that health concerns may far outweigh any purported benefits.^{vii}
- A 2015 Swedish study analysed the presence of flame retardants and persistent organic pollutants (POPs) over time in breast milk in Europe and North America. Breast milk from the USA contained more PBDEs as the use of flame retardants there is higher. In Sweden, decreasing concentrations of most POPs in breast milk were detected, while the flame retardant hexabromocyclododecane (HBCDD) increased over time (from 1972–2011).^{viii}

- The Stockholm Convention on Persistent Organic Pollutants has already banned several flame retardants. In October 2015, deca-BDE was proposed for addition to the elimination list by the Convention's review committee, echoing the September 2015 EU REACH Committee for Socio-Economic Analysis proposal to restrict its use.^{ix}
- A growing body of evidence suggests that endocrine-disrupting compounds (EDCs) are contributing to a general decline in fertility. A 2015 study revealed associations between exposure and subfertility for a number of compounds, including brominated flame retardants (BFR): detectable levels of a BFR in serum were associated with a 7.2% increased risk of subfertility and a 33% reduction in sperm motility.^x
- Brominated FRs are being substituted by phosphorus FRs but there may be concern about them too as documented by a recent analysis performed by the Danish Environmental Protection Agency.^{xi}

Other regulators recognise fire safety without hazardous flame retardants to protect health and environment.

- The State of California has identified “many flame retardant chemicals as being known to, or strongly suspected of, adversely impacting human health or development.”^{xii} In view of consumer protection, health and safety concerns, the State of California has updated its furniture flammability standard. Introducing TB117 2013 enabled the sale of furniture without added flame retardant chemicals and has maintained fire safety.
- The State of Washington recently passed a bill banning the use of flame retardant chemicals on the Chemicals of High Concern to Children list (CHCC), including TCEP, TDCPP, HBCD, TBBPA and decaBDE, from use in residential furniture and children's products, taking effect from 1 July 2016.^{xiii}
- In many US states, proposals banning flame retardants in mattresses, furniture and children's products are also being backed by firefighters who are concerned with the carcinogenic properties of the proposed chemicals and claim that the substances are not as effective as suggested in slowing the spread of fire.^{xiv}
- The United States is currently assessing three flame retardant clusters under the Toxic Substances Control Act (TSCA) to address the likely exposure and hazard scenarios to workers and consumers based on current production, use, and exposure information.^{xv}

Join the effort for a safer environment!

Furniture flammability standards that lead to the use of flame retardants bring harmful and potentially harmful chemicals into homes, schools, hospitals and workplaces. Such requirements threaten human health, the global environment, and the recycling of furniture in the circular economy. Different flammability standards in Europe also threaten competition and growth in the internal market.

There is an urgent need to re-evaluate the use of flame retardants in furniture and to take into account the possible adverse impacts on human health, workplaces, the environment, and on the responsible management of furniture waste in the presence of other measures to reduce fires.

Removing flame retardants from furniture is also a necessary step towards achieving a circular economy in Europe, which, according to the European Commission, has the potential of creating 400 000 jobs.^{xvi}

Important steps to eliminate hazardous flame retardants have already been taken through REACH and other regulatory approaches in the EU. It is time for the final step through harmonised safety requirements for furniture.

A safe fire safety is possible.

Signatories to this paper:

- European Fire Fighter Unions Alliance ([EFFUA](#))
- The Cancer Prevention and Education Society ([Cancer Prevention](#))
- European Environmental Bureau ([EEB](#))
- European Environmental Citizens Organisation for Standardisation ([ECOS](#))
- Zero Waste Europe ([ZWE](#))
- European Furniture Industries Confederation ([EFIC](#))
- European Bedding Industries' Association ([EBIA](#))
- European Federation of Building and Woodworkers ([EFBWW](#))
- CHEM Trust – Protecting humans and wildlife from harmful chemicals ([CHEM Trust](#))

Sources:

ⁱ Environmental Health Perspective 118:A516-A518 (2010): [San Antonio Statement on Brominated and Chlorinated Flame Retardants](#)

ⁱⁱ *ibid*

ⁱⁱⁱ Évaluation des risques liés à l'exposition aux retardateurs de flamme dans les meubles rembourrés <https://www.anses.fr/fr/content/évaluation-des-risques-liés-à-l'exposition-aux-retardateurs-de-flamme-dans-les-meubles>

^{iv} Evaluation of data on flame retardants in consumer products – Final report http://ec.europa.eu/consumers/archive/safety/news/flame_retardant_substances_study_en.pdf pp. 308-402

^v Environmental Health Perspective 118:A516-A518 (2010): [San Antonio Statement on Brominated and Chlorinated Flame Retardants](#)

^{vi} Cynthia A. de Wit, Dorte Herzke, Katrin Vorkamp, Brominated flame retardants in the Arctic environment — trends and new candidates, *Science of The Total Environment*, Volume 408, Issue 15, 1 July 2010, Pages 2885-2918 <http://www.sciencedirect.com/science/article/pii/S0048969709008055>

^{vii} Shaw, S.D., Berger, M.L., Harris, J.H., Yun, S.H., Wu, Q., Liao, C., Blum, A., Stefani, A., Kannan, K. (2013). Persistent organic pollutants including polychlorinated and polybrominated dibenzo-p-dioxins and dibenzofurans in firefighters from Northern California. *Chemosphere* 91:1386-1394. <http://www.ncbi.nlm.nih.gov/pubmed/23395527>

^{viii} Fång, J., Nyberg, E., Winnberg, U., Bignert, A. & Bergman, Å. (2015). Spatial and temporal trends of the Stockholm Convention POPs in mothers' milk — a global review. *Environ Sci Pollut Res* 22(12), pp.8989-9041. DOI: 0.1007/s11356-015-4080-z. This study is freely available at: <http://link.springer.com/article/10.1007%2Fs11356-015-4080-z>

^{ix} SEAC concludes on Bisphenol A, DecaBDE and PFOA restrictions and finalises two opinions for authorisation http://echa.europa.eu/view-article/-/journal_content/title/seac-concludes-on-bisphenol-a-decabde-and-pfoa-restrictions-and-finalises-two-opinions-for-authorisation

^x Science for Environment Policy, Eu Commission DG Environment News Alert Service, 7 January 2016: http://ec.europa.eu/environment/integration/research/newsalert/pdf/are_endocrine_disrupting_chemicals_responsible_for_downward_trends_in_male_fertility_441na2_en.pdf

^{xi} Environmental and health screening profiles of phosphorous flame retardants

<http://www2.mst.dk/Udgiv/publications/2016/01/978-87-93435-23-0.pdf>

^{xii} Senate Bill (SB) 1019: Upholstered Furniture, Flame Retardant Chemicals http://www.bearhfti.ca.gov/industry/advisory_sb_1019.pdf

^{xiii} House Bill Report E2SHB 1174

<http://lawfilesexet.leg.wa.gov/biennium/2015-16/Pdf/Bill%20Reports/House/1174-S2.E%20HBR%20APH%2015%20E1.pdf>

^{xiv} Minnesota bill proposes flame retardant bans <https://chemicalwatch.com/23826/minnesota-bill-proposes-flame-retardant-bans>

^{xv} US EPA releases initial assessments for flame retardants <https://chemicalwatch.com/31130/us-epa-releases-initial-assessments-for-flame-retardants>

^{xvi} Towards a Circular Economy http://europa.eu/rapid/press-release_MEMO-14-450_fr.htm