

Flame retardants - Part II

How can you avoid them?

Household Fires can destroy your furniture or other things in your home. To prevent or slow down the development of a fire, many industries add various groups of chemicals to their products, called flame retardants. These products are added onto the manufacture or finishing of your indoor items. But what are the major impacts of these substances and how can you reduce your exposure to them? In this article, I will answer these questions and give you some alternatives that have been discovered in recent years.

Many flame retardants (with bromine, chlorine, fluorine or iodine) are persistent, bio accumulative and/or toxic. This means that they do not degrade easily, can accumulate in animal or human systems, or can have harmful impacts on human health. In addition to the harmful health and environmental impacts of these chemicals, tests on the fire behaviour of materials with different flame retardants have revealed that halogen-free flame retardants produce less smoke and toxic fire emissions.

In humans, we can link different flame retardants to different health problems. Brominated flame retardants, the group that has received the most attention in extensive laboratory animal research, can accumulate in tissues, cause cancer, disrupt hormones, harm the reproductive system and cause neurodevelopmental problems. Other population studies have found effects including lowered IQ and possible behavioural problems in young children, including hyperactivity, aggression, and bullying. On the other hand, many flame retardants degrade into equally toxic compounds. An example of such chemicals is bisphenol A, an endocrine disruptor of concern. Another possible degradation product is called chlorinated dioxins and is among the highly toxic compounds listed by the Stockholm Convention on Persistent Organic Pollutants.

In many industries, flame retardants are generally regulated by states and governments. These fire safety codes and standards establish minimum performance requirements for

how a





product reacts to an ignition source such as a spark, flame, or other heat source. In response to concerns about the health effects of flame retardants in upholstered furniture, California amended its regulations to require that fabric covering upholstered furniture pass a smouldering test and to regulate the use of certain flame retardants in furniture. While companies weren't explicitly required to use flame retardants previously, they often did to abide by certain codes, and this new legislation no longer necessitated the extensive use of harmful chemical flame retardants.

Finally, these issues of eliminating environmental emissions of flame retardants can be solved by using a new classification of highly effective flame retardants, which do not contain halogenated compounds, and which can also be permanently anchored in the chemical structure of foams used in upholstered furniture. This new technology is based on an entirely new green chemistry, with the final foam containing about one third by weight of natural oils. More recent work in 2014 with green chemistry has shown that foams containing about 50% natural oils in their manufacture will produce significantly less smoke when involved in fire situations. The ability of these low-emission foams to reduce smoke emissions by more than 80% is an interesting property, which will facilitate the evacuation of fire situations and reduce the risks for first responders. Also, the construction industry has found alternatives for halogenated flame retardants such as graphite impregnated foam while less toxic alternative technologies for flame retardant furniture, such as barrier technologies and surface treatment, have also been identified by the US Environmental Protection Agency.

Since flame retardants are found almost everywhere, the best way to reduce exposure to them is to read labels, ask questions, and buy and use only organic products for life. By doing this, you will have more control over what you bring into your home and be less exposed to these man-made chemicals. To help you with your choices, you can visit the ASEQ-EHAQ Green Living Guide (www.EcoLivingGuide.ca/). Also, be aware of the risks of fire around you and thus avoid the exposure to chemicals released during the toxic breakdown of fire-retardant compounds.

Online links:

- TetraBDE and pentaBDE, Secretariat of the Stockholm Convention, copyright in 2019, <http://chm.pops.int/Implementation/Alternatives/AlternativestoPOPs/ChemicalslistedinAnnexA/TetraBDEandpentaBDE/tabid/5868/Default.aspx>



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