

What Health Care Purchasers Can Do to Reduce Flame Retardants

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What are flame retardants?

The widespread use of plastics and other synthetic materials has increased the flammability of many products and necessitated fire safety standards. To meet these standards, products have been modified with flame retardants, chemicals that inhibit ignition and the spread of flames.

Many chemicals are used as flame retardants. Of greatest concern are those with halogens attached to the carbon backbone, particularly the halogens chlorine and bromine. The former are called *chlorinated flame retardants* (CFRs), the latter *brominated flame retardants* (BFRs). Collectively, these are called halogenated organic flame retardants. The most commonly-used BFRs are polybrominated diphenyl ethers, or PBDEs.

Why are flame retardants a problem?

BFRs don't break down easily in the environment and have been found to increase up the food chain.¹ During the past 30 years, total PBDE levels in humans has increased by a factor of 100, doubling about every 5 years.² Animal studies link BFRs to immune suppression³, cancer⁴, endocrine

disruption⁵, and neuro-behavioral and developmental effects.⁶ PBDE levels in humans are now close to the levels shown in animals to have negative effects.⁷ CFRs have been found in household dust, water, sediments, and biological materials both near and distant from industrial sources.⁸ In addition, CFRs accumulate in the liver and kidneys and are suspected to be carcinogens and reproductive toxicants.⁹

Aren't the bad flame retardants being phased out?

Although some problematic flame retardants are slated for phase-out, others remain on the market. It is important to communicate to the marketplace your desire for safer flame-retardant products.

Are all non-halogenated flame retardants safer?

While it is not clear that all other types of flame retardants are safer, a report commissioned by the German government determined that the flame retardants aluminum trihydroxide, ammonium polyphosphates and red phosphorus are less problematic in the environment.¹⁰ Another way to meet flame retardancy standards without halogenated flame retardants is to redesign products using materials that are inherently more flame resistant, or to separate flammable materials from the heat sources inside a product. For example, Toshiba is using an inherently flame resistant plastic for the casing of some electronics.¹¹ These solutions cannot be used in all applications.

There is more information currently being gathered about the safety of other alternatives, so in the future it may be possible to make more specific recommendations.

What products contain halogenated flame retardants?

Products containing polyurethane foam, textiles and electronics are common sources of flame retardants. There may be other, less common applications. See box for a list of products that may contain flame retardants.

Recommendation

(See *Sample RFP language on page 2.*)

1. Require disclosure of the name and CAS number (the chemical abstracts service registry number) of all added flame retardants used in the all products you purchase.
2. Choose products, where available, that meet flame retardancy standards without any added flame retardants.
3. Choose products, where available, that meet flame retardancy standards without halogenated flame retardants. See Page 2 for a list of common halogenated organic flame retardants.
4. Tell your vendors that you prefer products that do not contain toxic, persistent, bioaccumulative toxicants. Tell them that, as more information on flame retardants becomes available, you will choose products with flame retardants that have been comprehensively tested for health and safety.

Products That May Contain Flame Retardants

(Note this list is not exhaustive. Other products not listed may contain flame retardants.)

- Cushioned furniture
- Mattresses
- Pillows
- Mattress pads & egg crate cushions
- Cushioned wheelchairs
- Cushioned exam tables
- Draperies
- Carpets
- Bedspreads
- Wall treatments
- Computers & displays
- Electronic devices
- Televisions
- Audiovisual equipment
- Printers
- Patient monitoring devices
- Roof Membranes

Sample RFP Language

[Purchasing entity] is concerned about the increasing environmental problems caused by certain flame retardants. To make an informed purchasing decision, we require that bidders disclose all flame retardants used in products offered. We will prefer products that meet flame retardancy standards without added flame retardants. We will prefer products that meet flame retardancy standards without halogenated organic flame retardants. As more information on flame retardants becomes available, we will prefer products that contain flame retardants for which comprehensive toxicity data is available and demonstrates the flame retardant is not toxic, persistent or bioaccumulative. We understand that such preferred products may not yet be available.

For each product offered, please list the components that contain flame retardants and the name and CAS number of the flame retardant(s) they contain. The bidder may need to ask the manufacturer or material supplier for this information.

| Product | Product Component | Flame Retardant Name | Flame Retardant CAS |
|---------|-------------------|----------------------|---------------------|
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |

Halogenated Organic Flame Retardants to Avoid

(list is not exhaustive)

| CAS | Name |
|------------|------------------------------------------|
| 79-94-7 | Tetrabromobisphenol-A |
| 25637-99-4 | Hexabromocyclododecane |
| 1163-19-5 | Deca-BDE (Decabromodiphenyl ether) |
| 32536-52-0 | Octa-BDE (Octabromodiphenyl ether) |
| 32534-81-9 | Penta-BDE (Pentabromodiphenyl ether) |
| 13674-84-5 | Tris(2-chloroisopropyl phosphate) (TCPP) |
| 115-96-8 | Tris(2-chloroethyl) phosphate (TCEP) |
| 13560-88-9 | Dechlorane Plus™ |

Share your information

Health Care Without Harm would like to compile information on the types of flame retardants present in different products. To the extent that you are able, please share with us any data you obtain as a result of your request for flame retardant disclosure by contacting us at info@hcwh.org.

For More Information

- **Fact Sheet: “Flame Retardants: Alarming Increases in Humans and the Environment”**
<http://www.noharm.org/details.cfm?ID=1098&type=document>.
- **Report: “Brominated Flame Retardants: Rising Levels of Concern”**
<http://www.noharm.org/details.cfm?ID=1095&type=document>.
- **List of Electronics, Furniture, Beds, and Mattresses that do not Contain Brominated Flame**

Retardants (Some of these products are available only in Europe and may contain other problematic or untested flame retardants.)

http://www.miljoeogsundhed.dk/artikel_disc.asp?artikelID=4559.

- **Health Care Without Harm** For updated information or assistance in gathering enough information to make a purchasing or policy decision, contact Health Care Without Harm at info@hcwh.org.

Notes

1. Birnbaum, L, Staskal D. “Brominated Flame Retardants: Cause for Concern?” *Environmental Health Perspectives* 112(1):9-17, Jan. 2004.
2. Hites RA, 2004. Polybrominated Diphenyl Ethers in the Environment and in People: A Meta-analysis of Concentrations. *Environ. Sci. & Technol.* 2004 Feb 15;38(4):945-56.
3. Darnerud PO. Toxic effects of brominated flame retardants in man and wildlife. *Environ Int* 29:841-853 (2003).
4. McDonald TA. A perspective on the potential health risks of PBDEs. *Chemosphere* 46:745-755 (2002); Lindstrom G, Hardell L, van Bavel B,

Wingfors H, Sundelin E, Liljegren G, Lindholm P. Current level of 2,2',4,4'-tetrabrominated diphenyl ether in human adipose tissue in Sweden - a risk factor for non-Hodgkin's lymphoma? *Organohalogen Compounds* 35:431-434 (1998).

5. Legler J, Brouwer A. Are brominated flame retardants endocrine disruptors? *Environ Int* 29:879-885 (2003); Darnerud PO. Toxic effects of brominated flame retardants in man and wildlife. *Environ Int* 29:841-853 (2003).
6. Viberg H, Fredriksson A, Erkksson P. Investigations of Strain and/or Gender Differences in Developmental Neurotoxic Effects of Polybrominated Diphenyl Ethers in Mice. *Toxicol Sci* 81:344-353 (2004).
7. McDonald, T. 2003. Conference presentation: “Examining the Potential Health Risks Posed by PBDEs.” Environmental Finance Center, Brominated Flame Retardants and Foam Furniture Conference and Roundtable, San Francisco, April 29, 2003.
8. Kemmlin S, Hahn O, Jann O. Emission of Flame Retardants from Consumer Products. Berlin, Germany: Federal Institute for Materials Research and Testing; Report (UFOPLAN) 299 65 321; 2003.
9. Ibid.
10. Leisewitz, A. et al. “Substituting Environmentally Relevant Flame Retardants: Assessment Fundamentals Summary,” Environmental Research of the Federal Ministry of the Environment, Nature Conservation, and Nuclear Safety Research Report 29744542, <http://www.oekorecherche.de/english/berichte/zusammenfassungen/zuFlammschutzE.html>.
11. McPherson, A, et al., “Brominated Flame Retardants in Dust on Computers: The Case for Safer Chemicals and Better Computer Design,” June 2004, http://www.computertakeback.com/the_problem/bfr.cfm.



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