



# American Public Health Association

*Working for a Healthier World*

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## **Testimony to Maryland Health and Government Operations**

### **Hearing on Environment – Brominated Flame Retardants – Decabrominated Diphenyl Ether – Prohibition**

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Good afternoon. My name is Olivia Carter-Pokras, Ph.D. I am an Associate Professor in the Department of Epidemiology and Biostatistics at the University of Maryland College Park School of Public Health. I am also a member of the Executive Board of the American Public Health Association. It is in this capacity that I am appearing before you today to lend support to House Bill 1 to prohibit the manufacturing, processing, selling, or distributing of new products that contain decabrominated diphenyl ether.

Founded in 1872, the American Public Health Association (APHA) is the oldest and most diverse organization of public health professionals in the world. The association works to protect all Americans and their communities from preventable, serious health threats. APHA represents a broad array of health officials, educators, environmentalists, policy-makers and health providers at all levels working both within and outside governmental organizations and education institutions.

In 2004, APHA issued a policy statement urging that proactive steps be taken to reduce human exposure to polybrominated diphenyl ether (PBDE) flame retardant compounds<sup>i</sup>.

Polybrominated diphenyl ether (PBDE) flame retardant compounds are widely used in foam products, textiles, electrical equipment, building materials and transportation. Penta-BDE, octa-

BDE and deca-BDE are three of the most common commercial classes. PBDEs are chemically similar to PCBs which have been banned since 1976 due to their high toxicity and persistence, and role in causing neurodevelopmental problems in children<sup>ii</sup>. Similarly, PBDEs are environmentally persistent, rapidly bioaccumulate in human tissue including breast milk, and function as developmental neurotoxicants in animals.<sup>iii</sup> Like PCBs, PBDEs are lipophilic and have been found in fish, bird eggs and marine mammals as well as in human milk, fat and blood.

While PCB levels in fish and breast milk have slowly declined since being banned, total PBDE levels in human milk, blood and tissues have increased by a factor of 100 during the past 30 years, doubling about every five years<sup>iv</sup>. Deca-BDEs, the most widely used class of PBDE, have increasingly been found in biota.<sup>v</sup> Moreover, it is clear that deca can debrominate and convert to the more bioavailable forms in the environment and potentially during metabolism as well, making them a greater health risk than originally thought. PBDE levels in U.S. women's breast milk are typically 10-100 times higher than levels in European women<sup>vi vii</sup> and are now approaching concentrations at which health effects (e.g., toxicity to the brain, reproductive system and liver and disruptive thyroid function) have been observed in laboratory animals.<sup>viii</sup>

Alternatives to the use of PBDE flame retardants are available and cost effective. Computer and electronics manufacturers like Apple, Ericsson, IBM, Intel, Motorola, Panasonic, Phillips, and Sony are already using alternatives. Companies such as IKEA furniture, Crate and Barrel and Eddie Bauer are requesting PBDE-free polyurethane foam from their manufacturers. Alternatives include: product redesign to eliminate the need for added chemicals; use of naturally flame retardant materials like wool and leather or plastics containing sulfur; and use of less toxic alternatives.<sup>ix</sup>

The European Union has enacted a ban on penta and octa-BDEs and is considering a ban on deca-BDEs as well. Several states (e.g., California, Hawaii, New York, and Maine) have enacted phase-outs of penta and octa-BDEs. Having identified safer alternatives to deca-BDEs,<sup>x</sup>

the state of Maine has banned the use of deca-BDE in mattresses and furniture effective January 1, 2008. The use of deca-BDE in televisions and other plastic-cased electronics will be phased out in Maine by January 1, 2010. In January of this year, Norway announced a ban on new products containing deca-BDE.

Phasing out these compounds and substituting safer alternatives protects U.S. manufacturers of PBDEs and companies that use them in their products from potential liability and helps maintain a European market for products requiring flame retardant properties. A PBDE phase-out also provides economic opportunities for workers in industries which make safer alternatives to PBDE flame retardants.<sup>xi</sup> Since exposure to PBDEs may include an inhalation route of exposure, phasing out the manufacture of these chemicals should better protect the health of workers in industries dealing with PBDEs.

APHA therefore urges Maryland state legislators to:

1. Require that PBDE flame retardants be phased out in all products manufactured and sold in Maryland;
2. Consider policies that alleviate short-term economic impacts on the PBDE production workforce, and to also consider economic benefits to workers in industries making safer alternatives;
3. Provide financial incentives for development and use of alternative flame retardants or preferably changes in product design to increase fire resistance without use of chemicals, to assure fire safety, while protecting the public from toxic exposures; that alternative flame retardants be adequately tested for toxicity; and that environmental and health safety must be assured prior to use;
4. Require labeling of chemical flame retardants used in products; and

5. Regulate the safe disposal of products containing brominated flame retardants and to prohibit land application of sewage sludge until testing can assure that such material does not contain measurable levels of PBDEs.

House Bill 1 provides a much needed vehicle to limit exposure to the toxic effects of PBDEs, and ultimately improve the health of Marylanders.

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<sup>i</sup> American Public Health Association Policy #2004-05. Preventing Human Exposure to Polybrominated diphenyl ether (PBDE) Flame Retardants to Protect Public Health

<sup>ii</sup> Jacobson JL, Jacobson SW. Intellectual impairment in children exposed to PCBs in utero. *N Engl J Med* 1996;335:783-789.

<sup>iii</sup> McDonald T. A perspective on the potential health risks of PBDEs. *Chemosphere* 2002;46(5):745-755.

<sup>iv</sup> Hites RA. Polybrominated diphenyl ethers in the environment and in people: a meta-analysis of concentrations. *Environ Sci Technol*. 2004.

<sup>v</sup> Stapleton HM, et al. Debromination of the flame retardant decabromodiphenyl ether by juvenile carp (*Cyprinus carpio*) following dietary exposure. *Environ Sci Technol* 2004;38(1):112-119.; Tomy GT, et al. Bioaccumulation, biotransformation, and biochemical effects of brominated diphenyl ethers in juvenile lake trout (*Salvelinus namacush*). *Environ Sci Technol* 2004; Lunder S, Sharp R. Mother's Milk: record levels of flame retardants found in American mother's breast milk. Environmental Working Group, [www.ewg.org](http://www.ewg.org), 2003:36.

<sup>vi</sup> Schechter A, et al. Polybrominated diphenyl ethers (PBDEs) in U.S. mother's milk. *Environ Health Perspect* 2003;111(14):1723-1729.

<sup>vii</sup> Mazdai A, et al. Polybrominated diphenyl ethers in maternal and fetal blood samples. *Environ Health Perspect* 2003;111(9):1249-1252.

<sup>viii</sup> Eriksson P, et al. Brominated flame retardants: a novel class of developmental neurotoxicants in our environment? *Environ Health Perspect* 2001;109(9):903-908; Darnerud PO, et al. Polybrominated diphenyl ethers: occurrence, dietary exposure, and toxicology. *Environ Health Perspect* 2001;109(suppl 1):49-68; Eriksson P, et al. A brominated flame-retardant, 2,2',4,4',5-pentabromodiphenyl ether: uptake, retention, and induction of neurobehavioral alterations in mice during a critical phase of neonatal brain development. *Toxicol Sci* 2002;67:98-103; Viberg H, et al. Neonatal exposure to the brominated flame retardant 2,2',4,4',5-pentabromodiphenyl ether causes altered susceptibility in the cholinergic transmitter system in the adult mouse. *Toxicol Sci* 2002;67:104-107; Viberg H, Jakobsson E. Developmental neurotoxic effects of 2,2',4,4',5-pentabromodiphenyl ether in the neonatal mouse. *Toxicologist* 2000;54:1360; Viberg H, et al. Brominated flame retardant: Uptake retention, and developmental neurotoxic effects of decabromodiphenyl ether in the neonatal mouse. *Toxicologist* 2001;61:1034.; Branchi I, et al. Effects of perinatal exposure to a polybrominated diphenyl ether (PBDE 99) on mouse neurobehavioural development. *Neurotoxicology* 2002;23:375-384; Lichtensteiger W, et al. Effect of polybrominated diphenylether and PCB on the development of the brain-gonadal axis and gene expression in rats. *Organohalogen Compounds* 2003;61:84-87; Kuriyama S, Chahoud I. Maternal exposure to low dose 2,2', 4,4' 5pentabromo diphenyl ether (PBDE 99) impairs male reproductive performance in adult rat offspring, *Organohalogen Compounds* 2003;61:92-95.

<sup>ix</sup> Umweltbundesamt (Germany's Federal Environment Agency), Substituting Environmentally Relevant Flame Retardants: Assessment Fundamentals. ISSN 0722-186X. March 2001.

<sup>x</sup> Brominated Flame Retardants: *Third annual report to the Maine Legislature*, January 2007, by the Maine Department of Environmental Protection and the Maine Center for Disease Control & Prevention.

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Online at <http://www.maine.gov/dep/rwm/publications/legislative-reports/index.htm>

<sup>xi</sup> Examples: Faribault Mills makes 100% wool blankets which are naturally flame resistant (<http://www.faribowool.com/>); RTP Company makes a non-halogenated, non-brominated flame retardant for use in plastics (<http://www.rtpcompany.com/>).