

Protect Public Health

SB 27/HB 63 “Flame Retardants and Toxic Chemicals”

Flame retardants are widely used in a variety of products to prevent and slow the spread of fire. While fire retardancy is important, some flame retardants, known as polybrominated diphenyl ethers or PBDEs, used in electronic and other products are leaving a lasting toxic legacy in people and the environment. With cost-effective and equally fire-safe alternatives available, it's time to phase out PBDEs.

- Polybrominated diphenyl ethers, or PBDEs, are a class of flame retardant chemicals added to many consumer products found in the home, office, automobiles, and airplanes.
- The three mixtures used most widely are penta-BDE, octa-BDE, and deca-BDE.
- Commonly found in electronics, such as the plastic casings of TVs and computers, and used in some furniture foams, textiles, and kitchen appliances, industry voluntarily ended production in the United States of the formulations of penta and octa in 2004 after high levels were found in breast milk.
- Over fifty million pounds of the toxic flame retardant decaBDE continue to be built into TVs, mattresses, and other products annually in North America.
- PBDEs are easily released from products as microscopic dust, which can be ingested, inhaled and absorbed.
- DecaBDE is a developmental toxin and listed as possible human carcinogen.
- Many electronic companies have found safer substitutes and have phased out the use of PBDEs.

The American Public Health Association, the International Association of Fire Fighters, and the Alaska Professional Fire Fighters Association have recommended the phase out of toxic PBDE flame retardants.

ALASKA'S FLAME RETARDANTS AND TOXIC CHEMICALS BILLS – SB 27 & HB 63

- Phases out the manufacture and sale of products containing penta- and octa-BDEs by July 1, 2014.
- Phases out the manufacture and sale of electronic products, furniture, textiles, and mattresses containing deca-BDE by 2014.
- Exempts transportation vehicles; products or equipment for industrial and mining use; products or equipment used in a manufacturing process; electronic wiring; resold

items; and items brought into the state before the effective date.

- HB 63 empowers Alaska State Department of Environmental Conservation (DEC) to ban other products containing flame retardants if it is determined that it is harmful to public health or the environment, and if reasonable safe alternatives exist.
- SB 27 and HB 63 direct DEC to participate in a multistate chemicals clearinghouse to build capacity to identify and promote safer chemicals and products; enhance the efficiency and effectiveness of state initiatives on chemicals through collaboration and coordination.

WHAT ARE TOXIC FLAME RETARDANTS?

Polybrominated diphenyl ethers are part of a broader chemical class called polyhalogenated aromatic hydrocarbons (PHAHs), which include other highly toxic chemicals such as polychlorinated biphenyls (PCBs) and dioxins. PBDEs are similar in structure to the banned chemicals PCBs and thus can have similar harmful effects on the body. PBDEs are intrinsically hazardous because of their chemical characteristics: (1) they are stable, meaning that they are persistent in the environment and do not break down easily; (2) they are lipophilic, meaning that they accumulate in fatty tissues of living organisms; and (3) they have toxic properties, including the potential to act as endocrine disruptors. Their persistence and fat solubility allow them to both bio-magnify and bio-accumulate, meaning that they build up in the bodies of animals and humans.

Increasing Levels

PBDE levels are increasing at an exponential pace, as they are still largely unregulated in the U.S.

- The highest known concentrations of PBDEs in human populations in the Arctic were found in Yupik women from the Yukon Kuskokwim Delta of Alaska.¹
- Levels of PBDEs in U.S. women's breast milk are 10-100 times higher than levels in European women.^{2,3}
- Concentrations of PBDEs have increased over the years in marine mammals due to atmospheric transport and bioaccumulation.⁴

HEALTH CONCERNS

Developmental Effects: A recent study at the Columbia Center for Children's Environmental Health demonstrated that children who had higher levels of PBDEs from prenatal exposures scored lower on tests of mental and physical development at ages 2, 4, and 6 years.⁵ Studies in laboratory animals indicate that neonatal exposure to PBDEs permanently damages learning and memory functions, impairs

motor activity, and is linked to permanent behavioral aberrations and hyperactivity.^{6,7}

Reproductive Effects: PBDE exposures have been correlated with cryptorchidism, or undescended testes in new born boys,⁸ and permanent impairment of sperm development in laboratory animal studies.⁷ Exposures have also been associated with the delay of puberty in both male and female laboratory animals and alterations in sexual development and gender-specific sexual behavior.⁹

Cancer: One study suggests that *in utero* exposure to PBDEs is associated with an increased risk of testicular cancer in men.¹⁰ The Agency for Toxic Substances and Disease Registry (ATSDR) lists deca-BDE as a possible human carcinogen based on the development of liver tumors in laboratory animals.¹¹

Thyroid Problems: Recent animal studies have shown that PBDE exposure is linked to decreased circulating concentrations of thyroid hormone⁷ and to a decrease in thyroid weight in adult offspring.⁹

SAFER ALTERNATIVES ARE AVAILABLE

Alternatives to the use of PBDE flame retardants are available and cost effective. Alternatives include product redesign to eliminate the need for added chemicals. According to reports written by the states of Illinois, Maine, and Minnesota, there are affordable alternatives to deca-BDE for consumer electronics, residential upholstered furniture, and mattresses. In fact, many of these alternatives are already being used in the marketplace. For instance, Washington State estimates that roughly 57% of televisions and 95% of computer products do not contain deca-BDE. A consensus statement signed by over 150 scientists emphasizes that brominated flame retardant chemicals increase fire toxicity, but their benefit in improving fire safety has not been proven.¹²

Many companies are taking the lead in using safer alternatives, including Apple, Dell, Xerox, Ericsson, IBM, Intel, Motorola, Sony, Panasonic, Phillips, Sealy, Serta, Select Comfort, and many others. Here is what the leading companies are saying about eliminating deca-BDE in their products:

“All virgin plastics presently used by Sony are ‘deca-free’ (Decabromodiphenyl ether). These products meet all relevant fire safety standards.”

-Sony Electronics

“We currently avoid the use of BFRs (brominated flame retardants) by using plastics that can be flame retarded with non-halogenated compounds and by using design strategies that reduce the need to use flame retarded plastics at all.”

-Dell Computer Corporation

“HP eliminated the use of two brominated flame retardants (BFRs) PBB and PBDE...HP has removed the remaining BFRs from the plastic housings of the vast majority of HP products.”

-Hewlett-Packard

“The use of PBDEs in mattresses today – which is limited already – will likely be voluntarily phased out entirely in the near future.”

-International Sleep Products Association

Reference

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