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# Bill to ban PBDEs would protect Alaskans

**COMPASS:** ***Other points of view***

By FRANK VON HIPPEL

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The Alaska State Legislature is considering a bill backed by Sen. Bill Wielechowski and Rep. Lindsay Holmes that would ban the import of furniture and electronics containing a class of toxic flame retardants known as PBDEs (polybrominated diphenyl ethers).

PBDEs are man-made chemicals produced for the manufacture of fire-resistant products. As products break down or release PBDEs into the atmosphere, the PBDEs find their way into the environment. PBDEs are highly persistent; they may remain unchanged for many decades or break down into daughter compounds that are also toxic.

Unfortunately, they are fat soluble and bioaccumulate in the fatty tissues of exposed animals. As these animals are consumed by predators, the PBDEs biomagnify up the food web, resulting in the highest levels in the top carnivores. Many of these top carnivores, such as fish and marine mammals, are important subsistence foods in Alaska.

People are exposed to PBDEs in multiple ways, including through the ingestion of fatty foods as well as contact with household dust. PBDEs have been found in human breast milk and in the blood of mothers and their babies. A Centers for Disease Control and Prevention study found that over 93% of Americans had detectable levels of PBDEs in their bodies, some at levels that are associated with health problems in laboratory animals. PBDEs have been found to disrupt the hormone system of numerous animals and have widespread effects on neurodevelopment and reproductive development.

The laboratory animals chosen for these studies have proven to be excellent models for human medical research time and time again. The hormone system of other vertebrates is almost exactly the same as the hormone system of humans. Therefore, disruption of hormone pathways in laboratory animals indicates that PBDEs likely cause similar developmental and health effects in humans.

PBDEs interfere with thyroid hormone, which regulates many aspects of development, and male and female sex steroids, which regulate sexual development and behavior. For example, PBDE exposure may cause undescended testes in newborn boys and reduced testosterone and sperm counts in men. Some PBDEs may be carcinogens. Although we do not fully understand the mechanisms by which PBDEs disrupt multiple hormone pathways, the evidence is sufficient to take a prudent approach and ban their import to Alaska where feasible.

Washington became the first state to ban all forms of PBDEs in 2007, with key support coming from firefighter associations. Firefighters advocated against PBDEs because when products containing PBDEs burn, they release highly toxic dioxins and furans. Associations of nurses and doctors also supported the legislation.

Maine, Oregon, Vermont, Rhode Island, Illinois and Massachusetts also have banned some or all of the PBDEs, and similar legislation is under consideration in other states. Similar bans are in effect in Canada and most European nations.

The Washington law required that safer and technically feasible alternatives to PBDEs be identified before the ban would go into effect. These alternatives, which meet fire-safety standards, were identified by Washington state agencies in December 2008; the identification of alternative flame

retardants allowed restrictions on the use of PBDEs in electrical products and furniture to take effect Jan. 1, 2011.

Many companies have taken a proactive approach in phasing out PBDE use. For example, Intel, IBM and Ericsson no longer produce products with PBDEs, and Hewlett-Packard, Sony, Motorola, Panasonic, NEC, Samsung and Toshiba are all working to phase out PBDEs.

Alaskans experience unusual levels of PBDE exposure for three reasons: The Arctic is a global sink for persistent pollutants that settle out of the atmosphere in cold temperatures; Alaskans who rely on a subsistence diet eat fish and marine mammals that accumulate PBDEs because of their position at the top of the food web; and we spend most of the winter sealed in our homes, where we are exposed to household dust containing PBDEs.

Therefore, Alaska has extraordinary cause to ban the importation of products containing these chemicals. We cannot control the atmospheric deposition of PBDEs into the Arctic or their delivery by ocean currents, but we can control their importation in consumer products.

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