



Marine Environmental Research Institute

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**Testimony of Dr. Susan Shaw, Director and Senior Scientist
Marine Environmental Research Institute
on LD 930: An Act To Clarify Maine's Phaseout of the "Deca" Mixture
of Polybrominated Diphenyl Ethers
Joint Standing Committee on Environment and Natural Resources
125th Maine Legislature, March 25, 2011**

Senator Saviello, Representative Hamper and members of the Committee. I am Dr. Susan Shaw, director and senior scientist at the Marine Environmental Research Institute (MERI), based in Blue Hill, Maine. **We have serious concerns about LD 930, a bill that would allow the use of toxic brominated and chlorinated flame retardants as substitutes for the banned deca-BDE** in plastic shipping pallets and certain consumer products including electronics, mattresses, and home furnishings. Maine law requires that manufacturers use safer alternatives when replacing deca-BDE in products. That law was passed based on an extensive review of sound science demonstrating that these halogenated compounds are environmentally persistent, bioaccumulative, and toxic to animals and humans.

Scientists are now widely challenging the safety and rationale of continued use of brominated and chlorinated flame retardants and their chemical counterparts in consumer and industrial products. **Scientific evidence increasingly shows that brominated and chlorinated flame retardants are not only hazardous to human health – adding the chemicals to consumer products has no proven fire safety benefit.**

Last fall, prominent scientists including Dr. Linda Birnbaum, Director of the National Institutes of Environmental Health Sciences, called attention to the dangers of these chemicals in a comprehensive review published in the international journal *Reviews on Environmental Health*¹ in conjunction with the **San Antonio Statement** (SAS) on Brominated and Chlorinated Flame Retardants² that was signed by 300 scientists from 22 countries.

I would like to share with you the major conclusions:

1. There is **overwhelming scientific consensus that brominated and chlorinated (halogenated) flame retardants are harmful to the health of humans and wildlife**¹⁻³. Because of their persistence, tendency to accumulate, and toxicity, many halogenated flame retardants (such as the PBDEs, polybrominated diphenyl ethers) have been banned by most countries. Brominated and chlorinated flame retardants are associated with and/or causally linked to cancers, endocrine disruption, reproductive problems, and developmental neurotoxicity in animals and humans. Recent peer-reviewed studies showed that that children exposed to PBDEs early in life can lose up to eight IQ points by the age of six⁴, that women with higher levels have trouble getting pregnant⁵, and that these compounds alter the functioning of human neurons⁶.
2. There is **no evidence of the benefits of using brominated and chlorinated flame retardants** – there is no data showing that adding them to products actually saves lives during fire events.
3. In fact, **these chemicals make fires more toxic**. There is **ample data showing that halogenated flame retardants significantly increase the toxicity of fires** by forming cancer-causing combustion

by-products -- dioxins and furans. Firefighters have an elevated incidence of four types of cancers which may be related to their exposure to dioxins and furans during fire events^{1,3}.

4. **Brominated and chlorinated replacements for banned flame retardants are of equal concern** as they have similar chemical structures and bioaccumulative/ toxic properties as the banned flame retardants¹⁻³. Many BFRs and CFRs that are substitutes for PBDEs, for example, are found not only in environmental samples and house dust but also in people and wildlife. There is growing evidence that certain compounds, such as **decabromodiphenyl ethane**, the replacement for deca-BDE, are of environmental and health concern.
5. Unfortunately, the problems with brominated and chlorinated flame retardants do not stop with their production and use. Once added to products, **halogenated flame retardants continue to wreak havoc throughout their life cycle** as a result of product aging (to dust), landfilling, incomplete combustion, and when they become electronic waste¹⁻³.
6. Halogenated flame retardants leach out of products such as foam furniture, baby products, and plastic computer/TV casings, and wind up in house dust as well as in landfills, waste water, and sewage sludge after the products are discarded³. Eventually these persistent compounds reach coastal and marine waters and contaminate the marine food web. **MERI's region-wide research in the Gulf of Maine shows widespread contamination by brominated flame retardants including deca-BDE of Maine's commercially important fish stocks (hake, flounder, mackerel, herring, plaice) and marine mammals⁷⁻¹⁰**. On a global scale, the levels of brominated flame retardants in our marine species are higher than in Europe or Asia. These findings are of concern to Maine's fisheries, tourism, and to the overall economy of Maine.
7. **Fire safety standards requiring the addition of halogenated flame retardants to multiple products need to be reconsidered.** Before implementing flammability standards, policy-makers should weigh the evidence of proven fire safety benefits against the health and environmental hazards of the chemicals, materials, or technologies likely to be used to meet the standard.
8. **Safe alternative (non-halogenated) flame retardants are available and many manufacturers and retailers (including Wal-Mart) are switching to safer products.** By eliminating toxic or untested flame retardant chemicals in consumer products, we can protect human, animal, and environmental health without compromising fire safety.

The State of Maine has been a leader in addressing the issue of toxic chemicals and attempting to keep them out of our homes, our offices, our food chain, and our children's bodies. **Based on solid science, we should be increasing, not dismantling these protections.**

We cannot revert to Federal laws for protection; state legislators need to continue to spur actions to protect Americans at the state and national levels. It is widely recognized that the **Federal Toxic Substances and Control Act (TSCA) is extremely weak and in dire need of a drastic overhaul** to address the thousands of chemicals in use that are not currently regulated – including toxic replacement chemicals for those that are banned. Unless we keep protective policies in place, **with each generation, our children's loads of brominated flame retardants will increase**, as will associated health problems.

Based on sound science, **we do not believe that Maine can afford to roll back the law requiring that manufacturers replace deca-BDE in products with safer alternatives.**

Dr. Susan Shaw, director/founder of the Marine Environmental Research Institute (MERI), is co-author of the San Antonio Statement and lead author of the comprehensive review article, Halogenated flame retardants: Do the fire safety benefits justify the health and environmental risks? recently published in the international journal *Reviews on Environmental Health*. She holds a Doctor of Public Health/ Environmental Health Sciences degree from Columbia University and has been studying the impacts of toxic chemicals on marine ecosystems and people for thirty years. In 2000, Dr. Shaw established the MERI Center of Marine Studies in Blue Hill, Maine to expand the organization's research in the Gulf of Maine. In 2007, she was awarded a Certificate of Recognition by the Maine Legislature for her work.

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