

Excerpts from the  
**Michigan Interdepartmental Toxics  
Steering Group Report on PBDEs**  
(Polybrominated Diphenyl Ethers)



Michigan Network for  
**CHILDREN'S  
Environmental  
HEALTH**

The following statements are excerpted from "Polybrominated Diphenyl Ethers: A Scientific Review with Risk Characterization and Recommendations," a May 2008 report from the state's Interdepartmental Toxics Steering Group. The full report is available at [www.michigan.gov/documents/deq/deq-tox-PBDEBackground\\_Paper-5-08\\_243976\\_7.pdf](http://www.michigan.gov/documents/deq/deq-tox-PBDEBackground_Paper-5-08_243976_7.pdf).

**"The first recommendation is to support a legislative ban on Deca-BDE contingent on the availability of a safe alternative."\***

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"PBDEs are of significant environmental concern because they are **toxic, bioaccumulative and persistent**. Levels in humans and wildlife are **increasing exponentially**."

- p. x

"While there are many uncertainties associated with quantifying risk from environmental exposure to Deca-BDE, the available data suggest **reason for concern and support action to limit uses and move to safer alternatives**."

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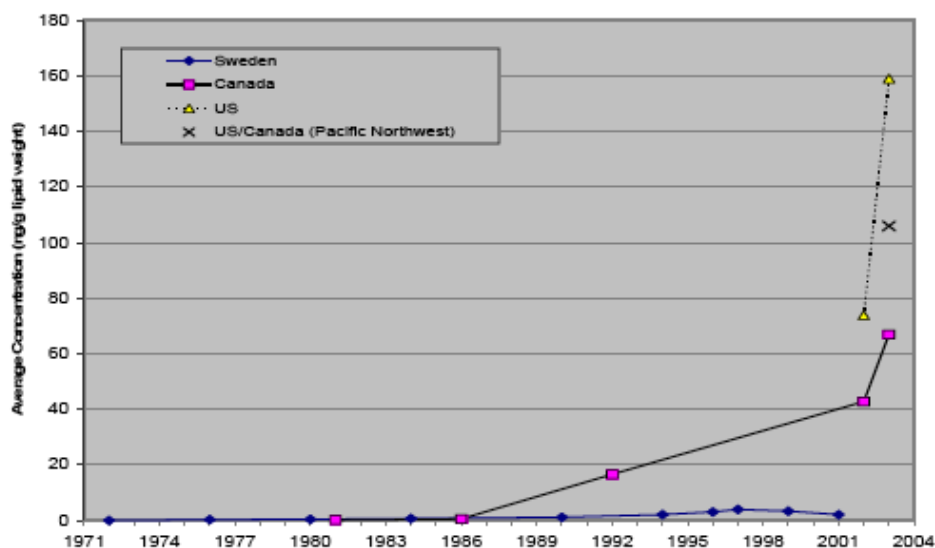
PBDE Levels Rapidly Rising in People

"Temporal trends of **PBDEs in human tissues** show levels in North America are increasing significantly over time ... PBDE levels in **breast milk** also show similar increases over time and appear to be **doubling every 2-5 years in North America** (Betts, 2002)."

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Figure 6: Trends of PBDEs in Human Milk for Sweden, Canada, and the United States

(Data from Meironyte et al., 1999; Ryan et al., 2002; Guvenius et al., 2003; Schecter et al., 2003; EWG, 2003; Northwest Environmental Watch, 2004)



“Data on concentrations of PBDEs in human blood, breast milk, and adipose tissue have consistently shown levels to be significantly higher in North America, compared to Europe or Japan. **Levels found in the United States (U.S.) are the highest of all countries** for which there are data and **are about ten to 100 times greater than human tissue levels in Europe.**”

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#### PBDEs Rapidly Increasing in Michigan’s Environment and in the Great Lakes

“PBDEs have been found in ambient air, lakes, rivers, soils, and sediments as well as the indoor environment.”

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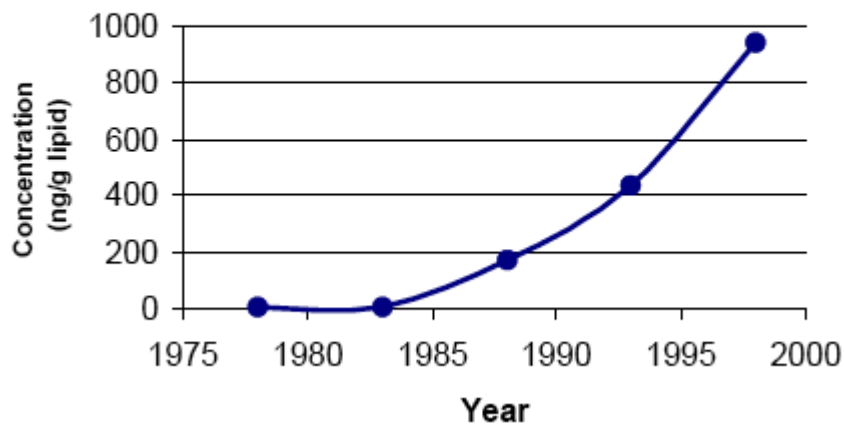
“The sum of these PBDE congeners **increased exponentially in all the Great Lakes** from 1980 to 2000, with doubling times ranging between 3-4 years.”

- p. 50

“Herring gull eggs from the Great Lakes region analyzed by the Canadian government showed a **60-fold increase during the past two decades with no significant signs of downward trends** (Moisey et al., 2001, as cited in de Wit, 2002).”

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**Figure 4: Total PBDE Concentrations in Whole Lake Trout from Lake Ontario Between 1978 and 1998 (Luross et al., 2000)**



“Estimated doubling times for PBDEs in sediments of Lake Michigan ranged from 10-13 years, and in Lake Huron from 10-12 years...”

- p. 66

“The MDEQ (2006), found **PBDEs in all floodplain soils and sediment samples. Deca-BDE was the predominant** congener in floodplain soils and sediments.”

- p. 66

“Great Lakes fish have been observed to have relatively high concentrations of PBDEs compared to other foods. However, concentrations in milk and chicken may be considered substantial, given the total quantities of these items consumed by the public.”

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### Increasing Evidence of Health Risks

“Some PBDE congeners exhibit **toxicity similar to dioxins.**”

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“Exposure of laboratory animals to PBDEs has resulted in histopathological **changes to the liver, neurodevelopmental effects** in developing animals, and/or **reductions in thyroid hormone levels.**”

- p. xi

“Since PBDEs have structures **similar to** other halogenated aromatic contaminants, such as polychlorinated biphenyls (**PCBs**) and **dioxin**, it has been proposed that they may have a similar mechanism of action.”

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### Children at Highest Risk

“Household dust has been shown to contain high concentrations of PBDEs and typically, Deca-BDE is the most abundant congener. **Household dust may be a significant exposure pathway.** This is a concern since **children ingest a greater amount of house dust** than adults due to their frequent hand-to-mouth activity.”

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### Deca Breaks Down to More Toxic Chemicals Like the Banned PBDEs

“Evidence is available which demonstrates **that Deca-BDE debrominates to the more toxic PBDE congeners.**”

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“The effects of exposure to multiple PBDE congeners potentially are additive. If the effects are additive, **the risks could be significantly greater than those related only to Deca-BDE.**”

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### Deca is Produced in the U.S. Only in Arkansas

“In the U.S., **PBDEs are only produced in Arkansas** at the Albemarle Corporation (Magnolia, AK) and at the Great Lakes Chemical Corporation (Eldorado, AK) (ATSDR, 2004).”

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\* **Editorial Notes:** The state Interdepartmental Toxics Steering Group did not analyze the safer alternatives but analysis by other states and researchers confirm their availability and widespread use for all products in HB 4699.

(Bold in the excerpts was added by the Michigan Network for Children's Environmental Health.)

**Organization Members:** American Academy of Pediatrics (Michigan Chapter), Arab Community Center for Economic and Social Services (ACCESS), Association for Children's Mental Health, Autism Society of Michigan, Citizens for Alternatives to Chemical Contamination, Clean Water Fund, Clinton County Family Resource Center, Detroiters Working for Environmental Justice, East Michigan Environmental Action Council, Ecology Center, Healthy Homes Coalition of West Michigan, Learning Disabilities Association (LDA) of Michigan, Local Motion, Michigan Chapter of the National Association of Pediatric Nurse Practitioners, Michigan Coalition for Children and Families, Michigan Environmental Council, Michigan League of Conservation Voters Education Fund, Michigan Nurses Association, Science and Environmental Health Network, Voices for Earth Justice.

**Our Mission:** Through education, outreach, and advocacy, we seek to protect Michigan's children from adverse impacts caused by exposure to widespread hazardous chemicals.

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