

The Alliance for a Clean and Healthy Vermont is a health-based coalition of citizens, children's advocates, health professionals, housing groups, environmentalists, and others committed to protecting human health from toxic chemical exposure.

Our goal is to phase out the use of persistent toxic chemicals and to advance a precautionary approach towards the use and regulation of chemicals. We are working with business and government leaders to promote policies that protect public health and support the safest alternatives.

Founding Organizations

- INFORM, Inc.
- River Network
- Toxics Action Center
- Vermont Public Interest Research Group
- Voices For Vermont's Children

The Alliance for a Clean and Healthy Vermont includes more than a dozen organizations.

Deca



Fighting fires does not have to have toxic consequences. While fire retardancy is important, flame retardants known as Polybrominated diphenyl ethers (PBDEs) are rapidly accumulating in our bodies and the environment. PBDEs have been found to be toxic to animals and may threaten our own health. Safer, affordable, and equally effective alternatives are available.

Quick Facts

- There are three commercial forms of PBDEs: Penta, Octa, and Deca. Due to mounting health concerns, the sole U.S. manufacturer of Penta and Octa voluntarily ceased production of the chemicals.
- Deca continues to be used heavily in the United States. Over 40% of all Deca produced worldwide is used in North America.¹ Deca is used in television enclosures, some computers, wire and cable and some textiles.
- PBDEs including Deca are widely found in the environment and wildlife, and build up in the human body, including cord blood and breast milk. They are also present in household dust.
- PBDEs are reproductive and developmental toxins and children are highly exposed to these chemicals.
- Safer substitutes exist and many companies have already phased out the use of Deca in their products. 95 percent of computer products and 57 percent of televisions are already Deca-free.²

What are toxic flame retardants?

PBDEs are flame retardants used in foam products, textiles, electrical equipment, building materials and transportation. Penta (pentabromodiphenyl ether), Octa (octabromodiphenyl ether) and Deca (decabromodiphenyl ether) are three of the most common commercial forms. Chemically, they are very similar to PCBs, which were banned in 1979 due to their high toxicity, persistence, and evidence that they can cause developmental problems in children. Like PCBs, PBDEs accumulate in the environment, in wildlife, and in humans. They are also commonly found in household dust.

Toxic Levels on the Rise

While PCB levels in fish and breast milk have slowly declined since being banned, PBDE levels are increasing at an exponential pace, as they are still largely unregulated in the U.S.

- Levels of PBDEs in U.S. women's breast milk are 10–100 times higher than levels in European women.^{3,4}
- Total PBDE levels in breast milk, blood and tissues have increased by a factor of 100 during the past 30 years, doubling about every five years.⁵

Vermont Organizations Support Banning PBDEs

AFL-CIO

INFORM, Inc.

Mama Says

Planned Parenthood of Northern New England

Professional Fire Fighters of Vermont

River Network

Toxics Action Center

Vermont Public Interest Research Group

Voices for Vermont's Children

Health Impacts of PBDEs

Laboratory studies in animals indicate that PBDEs, like PCBs, are toxic to the brain, reproductive system and liver, and disrupt thyroid function.

- The U.S. Environmental Protection Agency considers Deca a possible human carcinogen⁶
- Exposure to Deca in mice and rats during brain development “can give rise to irreversible changes in adult brain function.”⁷
- PBDEs have been linked to delayed onset of puberty and reproductive development.⁸

- Deca has the ability to cause the same effects on developing brains of mice as Penta,⁹ which has already been banned in eleven states and Europe.
- Deca can break down into more toxic forms in soil, sediment, house dust and fish tissue.¹⁰
- An estimated 5 percent of American women have levels of PBDEs in their bodies greater than levels that have been shown to cause reproductive problems in laboratory animals.¹¹
- Children are receiving up to 300 times greater exposure than adults, primarily from breast milk and dust ingestion.^{12, 13}

VERMONT MUST TAKE STEPS TO PROTECT PUBLIC HEALTH AND THE ENVIRONMENT FROM THESE TOXIC FLAME RETARDANTS

Health Professionals Support Banning PBDEs

American Academy of Pediatrics
(Maine, Michigan, District 2)

American Public Health Association

Breast Cancer Fund

Center for Children's Health and the Environment, Mount Sinai School of Medicine

Columbia Center for Children's Environmental Health

Institute of Neurotoxicology and Neurological Disorders

Physicians for Social Responsibility
(Greater Boston, Maine, LA)

¹ Illinois Environmental Protection Agency. *DecaBDE Study: A Review of the Available Research. A Report to the General Assembly and the Governor In Response to Public Act 94-100* (p. 2). January 2006. <http://www.epa.state.il.us/reports/decabde-study/available-research-review.pdf>.

² Washington State DEP. *Washington State Polybrominated Diphenyl Ether (PBDE) Chemical Action Plan: Final Plan* (p.65). January 2006.

³ Schechter A, Pavuk M, Papke O, Ryan JJ et al. 2003. Polybrominated diphenyl ethers (PBDEs) in U.S. mother's milk. *Environ Health Perspect* 111(14): 1723-1729.

⁴ Mazdai A, et al. 2003. Polybrominated diphenyl ethers in maternal and fetal blood samples. *Environmental Health Perspectives* 111(9): 1249-1252.

⁵ Hites RA, 2004. Polybrominated diphenyl ethers in the environment and in people: a meta-analysis of concentrations. *Environ. Sci. & Technol.* 38(4): 945-56.

⁶ Agency for Toxic Substances and Disease Registry (ATSDR) ToxFAQs. Polybrominated Diphenyl Ethers (PBDEs). September 2004. <http://www.atsdr.cdc.gov/tfacts68-pbde.html>. Accessed January 16, 2008.

⁷ Viberg H, Fredriksson A, Jakobsson E et al. Neurobehavioral Derangements in Adult Mice Receiving Decabrominated Diphenyl Ether (PBDE 209) during a Defined Period of Neonatal Brain Development. *Toxicological Sciences*. 2003. Volume 76. Pp 119 (Print 8). <http://toxsci.oxfordjournals.org/cgi/reprint/76/1/112>. Accessed January 16, 2008.

⁸ Birnbaum L. Staskal D. Brominated Flame Retardants: Cause for Concern? *Environmental Health Perspectives*. Volume 112. Number 1. January 2004. (Print Pp 14). <http://www.ehponline.org/members/2003/6559/6559.pdf>. Accessed January 16, 2008.

⁹ Viberg H, Fredriksson A, Jakobsson E et al, 2003. Neurobehavioral derangements in adult mice receiving decabrominated diphenyl ether during a defined period of neonatal brain development. *Toxicol Sci.*, 76(1): 112-20.

¹⁰ Stapleton HM et al 2004. *Environ Sci Technol* 38(1): 8A-9A.

¹¹ McDonald TA, 2005. Polybrominated diphenylether levels among United States residents: daily intake and risk of harm to the developing brain and reproductive organs. *Integr Environ Assess Manag.* 1(4): 343-54.

¹² Jones-Otazo HA, Clarke JP, Diamond ML, Archbold JA et al, 2005. Is house dust the missing exposure pathway for PBDEs? An analysis of the urban fate and human exposure to PBDEs. *Environ Sci Technol.* 39(14): 5121-30.

¹³ Stapleton HM, Dodder NG, Offenbergh JH, Schantz MM, Wise SA, 2005. Polybrominated diphenyl ethers in house dust and clothes dryer lint. *Environ Sci Technol.* 39(4): 925-31.