

Protecting Kids' Health by Eliminating Toxic Flame Retardants (PBDEs)

Scientific Evidence Shows Need to Eliminate Deca

1) Deca breaks down into more toxic, banned chemicals.

Numerous studies show that deca breaks down in the environment into other forms of PBDEs, including the ones found in the banned penta. After extensive review of the literature, the Departments of Ecology and Health concluded that deca-BDE is likely to breakdown in the environment to more toxic and bioaccumulative forms of PBDEs.

- When exposed to UV light and sunlight, deca breaks down. Deca has been shown to break down on sand, sediment, soil, as well as in house dust and fish tissue. Bacteria has also been shown to break down deca.

Washington State Polybrominated Diphenyl Ether (PBDE) Chemical Action Plan: Draft Final Plan, December 2005. <http://www.ecy.wa.gov/biblio/0507048.html>

American Chemical Society (June 2006). In Vivo and In Vitro Debromination of Decabromodiphenyl Ether (BDE 209) by Juvenile Rainbow Trout and Common Carp. <http://pubs.acs.org/cgi-bin/abstract.cgi/esthag/2006/40/i15/abs/es060573x.html>

Environmental Science and Technology News (July 2006). Bacteria may break down popular flame retardant to produce toxics. <http://pubs.acs.org/subscribe/journals/esthag/40/i14/html/071506news4.html>

Eriksson J, Green N, Marsh G, Bergman A. Photochemical decomposition of 15 polybrominated diphenyl ether congeners in methanol/water. *Environ Sci Technol.* 2004.

Hermann, T.; Schilling B.; and Papke, O. Photolysis of PBDEs in solvents by exposure to daylight in a routine laboratory. *Organohalogen Compounds* 63, 361 - 364 (2003).

Peterman, P.H.; Orazio, C.E.; and Feltz, P.P. Sunlight photolysis of 39 mono-hepta PBDE congeners in lipid. *Organohalogen Compounds* 63, 357-360 (2003).

Söderström G, Sellström U, de Wit CA, Tysklind M. Photolytic debromination of decabromodiphenyl ether (BDE 209). *Environ Sci Technol.* 2004.

Stapleton, 2005, Degradation of Decabromodiphenyl Ether (BDE 209) in House Dust Following Sunlight Exposure, Report for the Environment Agency, Chemical Assessment Section

Stapleton HM, Alaei M, Letcher RJ, Baker JE. Debromination of the flame retardant decabromodiphenyl ether by juvenile carp (*Cyprinus carpio*) following dietary exposure. *Environ Sci Technol.* 2004.

Kierkegaard A, Balk L, Sellström U, Tjärnlund U, Örn U, de Wit C, Jansson B. Uptake of decabromodiphenyl ether (DeBDE) in rainbow trout via administration in the diet. Presented at the 5th SETAC-Europe Congress, 25-28 June 1995, Copenhagen, Denmark.

Watanabe I, Satsukawa R. Formation of brominated dibenzofurans from the photolysis of flame retardant decabromodiphenyl ether in hexane solution by UV and sunlight. *Bull Environ Contam Toxicol.* 1987.

2) Deca is found in the cord blood of newborn babies, breast milk, wildlife, and the food chain.

- Deca was found in over half the women (24 out of 40) in a study of breast milk in the Pacific Northwest.

Northwest Environment Watch, "Flame Retardants in the Bodies of Pacific Northwest Residents", September 2004. <http://www.northwestwatch.org/toxics/>

- Deca and has been found in the cord blood of newborn babies.

Environmental Working Group, "Body Burden: The Pollution in NewBorns," July 2005. <http://www.ewg.org/reports/bodyburden2/execsumm.php>

- Deca is found in polar bears, grizzly bears and peregrine falcon eggs.

Cone, Marla. *Polar Bears Face New Toxic Threat: Flame Retardants.* January 2006. *Los Angeles Times.*

Christensen, et al. 2006. "Persistent Organic Pollutants in British Columbia Grizzly Bears: Consequence of Divergent Diets." *Environmental Science and Technology.*

Lindberg P, Stellstrom U, Haggberg L and De Wit CA, 2004. Higher Brominated Diphenyl Ethers and Hexabromocyclododecane Found in Eggs of Peregrine Falcons (*Falco peregrinus*) Breeding in Sweden, *Environmental Science and Technology.*

3) Deca damages the developing brain in mammals.

- Scientific findings strongly suggest that deca is neurotoxic. In mice, deca produced irreversible changes in brain function that actually worsened with age in adult mice. This is the same health effect seen for banned forms of PBDEs (penta and octa) and the banned PCBs.

Viberg H, Fredriksson A, Jakobsson E, Örn U, Eriksson P. Neurobehavioral derangements in adult mice receiving decabrominated diphenyl ether during a defined period of neonatal brain development. *Toxicol Sci.* 2003.

4) The United States Environmental Protection Agency lists deca as a possible carcinogen.

- When evaluated in rodent cancer studies, rats and mice developed nodules in their livers, which are considered to be precursors to cancer.

National Toxicology Program. *Toxicology and carcinogenesis studies of decabromodiphenyl oxide (CAS No. 1163-19-5) in F344/N rats and B6C3F1 mice (feed studies).* TR-309. Research Triangle Park, NC: NTP, 1986.

