

## **ENVIRO-HEALTH NEWS**

For immediate release, Thursday, April 8, 2004

For more information, contact:

Mike Belliveau (207) 827-6331 or Steve Gurney (207) 807-6022, Environmental Health Strategy Center

State Representative Hannah Pingree (207) 691-5071

State Representative Ted Koffman (207) 287-4149

### **Maine Leads Nation with Ban on Toxic Fire Retardants State legislation includes first-in-the-nation phase out of Deca**

Late last night, the Maine state legislature enacted a new law that requires safer alternatives to widely used toxic chemicals that are building up to high levels in human breast milk and wildlife. These chemicals, known as polybrominated diphenyl ethers (PBDEs), are added to plastics in computers and TVs, to foam in cushions and mattresses, and to the synthetic fibers in upholstery to slow the spread of flames during a fire. Scientists have compared PBDEs to notorious toxic chemicals like PCBs and DDT, which are also persistent and bioaccumulative and were banned in the 1970's. Governor John Baldacci is expected to sign the bill into law within the next ten days.

"This is a common sense response to a serious public health threat," said State Representative Hannah Pingree (D-North Haven), sponsor of the legislation. "Maine children are being needlessly exposed to chemicals that may cause learning disabilities and behavioral problems," said Rep. Pingree.

The enacted version of the bill, 'An Act to Reduce the Contamination of Breast Milk and the Environment from the Release of Brominated Flame Retardants in Consumer Products', will:

- \* Ban the sale of products containing the PBDEs known as Penta and Octa by January 1, 2006
- \* Phase out the most widely used of the PBDEs, known as Deca, by January 1, 2008 if safer alternatives are found to be nationally available
- \* Require annual reports on the threats to human health and the environment posed by other brominated flame retardants (BFRs) in addition to the PBDEs

With this legislation, Maine becomes the first state in the country to pass a law calling for the phase out of the Deca PBDE. Last year Europe banned all three PBDEs, while California passed legislation that only bans Penta and Octa. Later, the sole U.S. manufacturer announced a halt to production

of Penta and Octa by January 2005. The European action bans Deca in electronics and electrical equipment by July 1, 2006. Last month, the Washington state legislature approved funding for a state agency to develop a phase out plan for all PBDEs including Deca. The bromine chemical industry that produces Deca (and more than 70 other BFRs) continues to lobby for an exemption from the European ban on Deca and strongly opposed the Maine legislation because of the Deca phase-out.

"Scientists are alarmed about the build up of these persistent toxic chemicals in humans and in the food chain," said State Representative Ted Koffman (D-Bar Harbor), House Chair of the Natural Resources Committee of the Maine Legislature which earlier gave its unanimous approval to the amended bill. "Maine is taking proactive action like California, Washington, and Europe to phase out these persistent toxic chemicals in favor of safer alternatives."

"Safer alternatives are available, affordable and effective," said Michael Belliveau, executive director of the Environmental Health Strategy Center, a Maine-based public health advocacy organization. "Industry leaders are already marketing products free from these dangerous chemicals while meeting the highest fire safety standards," Belliveau said.

Corporations that have begun the switch to safer alternatives to PBDEs and other brominated flame retardants include Intel, Apple, NEC, Toshiba, Ericsson, Phillips, Sony and IKEA.

PBDEs have been shown to damage the developing brain of mammals. When young mice were exposed once during the critical period of brain growth, they suffered permanent neurobehavioral damage that worsened with age. The affected mice were initially less active, and then later hyperactive, compared with mice that weren't exposed. Other studies document damage to the thyroid, which governs healthy brain development in young mammals and humans.

The level of PBDEs in the breast milk of U.S. women is 10 to 100 times higher than in European women. The amount of these chemicals that infants are exposed to in the womb and from breast milk approaches the levels known to cause harm in lab animals without an adequate margin of safety.

The hotly contested debate to phase out the Deca PBDE was driven by four facts:

- \* Deca is found everywhere in the environment. Deca shows up at high levels in household dust, the invisible film that adheres to the inside of windows and in sediments and sewage sludge. Deca has also been found in human breast milk and blood although at lower levels than the Penta PBDE.

\* Deca causes neurodevelopmental toxicity in mammals similar to that found for the Penta BDE, which has been studied more intensively. The growing brain of mice was permanently damaged by Deca exposure leading to adverse affects on behavior;

\* High concentrations of Deca have been reported in the eggs of peregrine falcons and other predatory birds. This demonstrates the magnification of this fat-soluble chemical up the terrestrial food chain, like DDT and PCBs. The amount of these chemicals in bird eggs approaches the levels known to cause harm in lab animals without an adequate margin of safety.

\* Deca breaks down in the environment and in fish into the lower brominated PBDES including Penta, which is more toxic and more bioaccumulative than Deca. The lower brominated Penta and Octa are being banned by governments and withdrawn by industry.

More than 120 million pounds of the Deca PBDE were produced in 2001, accounting for about 80% of all uses of the three PBDEs. Deca is the second most widely used of any brominated flame retardant in the world after TBBPA, a BFR chemical used in almost all printed circuit boards. The originally proposed Maine legislation would have also phased out TBBPA and other BFRs but those provisions were struck from the final bill in response to opposition from the electronics and building materials industries.

Other bills similar to the final Maine legislation to replace PBDEs with safer alternatives have been introduced in several other states including New York and Minnesota. California has also proposed an amendment to last year's law to phase out the Deca PBDE. Federal legislation to phase out PBDEs was introduced last month by U.S. Representatives Hilda Solis (D-CA), Lynn Woolsey (D-CA) and Diana DeGette (D-CO).

- END -

#### List of Other Knowledgeable Contacts:

\* David Littell, Deputy Commissioner, Maine Department of Environmental Protection, (207) 287-7887

\* Richard Davies, Senior Policy Advisor, Maine Governor John Baldacci, (207) 287-3531

\* Kim Hooper, Senior Scientist, California Environmental Protection Agency, (510) 540-3499

\* Linda Birnbaum, Senior Scientist, U.S. Environmental Protection Agency, (919) 541-2655

\* Peter O'Toole, U.S. director, Bromine Science and Environmental

Forum (chemical industry trade group), (202) 530-4847

\* Raymond Dawson, Director, Fire Safety and Advocacy, Albemarle Corporation, (225) 388-7888, and Chairman, Bromine Science and Environmental Forum, Brussels, Belgium +32 2 743 66 18

Attachments:

\* FACT SHEET: The Scientific Case Against Deca

\* FACT SHEET: Safer Alternatives to BFRs are Available, Effective and Affordable

The Scientific Case against Deca-BDE

Deca Builds Up in Predatory Birds (Falcons)

New studies have found levels of Deca in peregrine falcon eggs that approach levels that cause permanent brain damage in mammals without an adequate margin of safety. Deca has also been found in human breast milk and blood, in fish and chickens, at high levels in rain, household dust and the gooey film on the inside of home windows, and in sediments and sewage sludge.

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*, 38(1): 93-96.

Ter Shure AFH, Larsson P, Agrell C and Boon JP, 2004. Atmospheric Transport of Polybrominated Diphenyl Ethers and Polychlorinated Biphenyls to the Baltic Sea, *Environmental Science and Technology*, (in press).

Deca Damages the Developing Brain in Mammals

When young mice were exposed once to Deca during the critical period of brain growth, they suffered permanent neurobehavioral damage that worsened with age. The affected mice were initially less active, then later hyperactive, compared to mice that weren't exposed. Studies of other PBDEs also show damage to thyroid balance, which governs healthy brain development in young animals.

Viberg H, Fredriksson A, Jakobsson E, Orn U and Eriksson P, 2003. Neurobehavioral Derangements in Adult Mice Receiving Decabrominated Diphenyl Ether (PBDE 209) during a Defined Period of Neonatal Brain Development, *Toxicol. Sciences*, 76: 112-120.

### Deca Forms More Toxic, Accumulative Products

Several new studies show that Deca breaks down when exposed to sunlight and when metabolized by fish. The breakdown products identified include the other, lower brominated PBDEs that are more toxic and bioaccumulative and are banned.

Soderstrom G, Sellstrom U, de Wit C and Tysklind M, 2004. Photolytic Debromination of Decabromodiphenyl Ether (BDE 209), *Environmental Science & Technology*, 38(1): 127-132.

Stapleton HM, Alae M, Letcher RJ and Baker JE, 2004. Debromination of the Flame Retardant Decabromodiphenyl Ether by Juvenile Carp (*Cyprinus carpio*) following Dietary Exposure, *Environmental Science and Technology*, 38(1): 112-119.

Hermann T, Schilling B and Papke O, 2003. Photolysis of PBDEs in Solvents by Exposure to Daylight in a Routine Laboratory, *Organohalogen Compounds*, 63: 361-364.

### Safer Alternatives to BFRs are Available, Effective and Affordable

#### Strategy

#### Example

##### 1. Design Products for Fire Prevention

Electronics design engineers can physically separate flammable parts from heat generating parts or place protective metal shields around plastic in contact with current carrying components to meet safety standards

## 2. Use Naturally Flame Resistant Materials

Toshiba used polyphenylene sulphide, a plastic with inherent flame resistance that meets safety standards, to replace BFR-containing plastic casings for electronic parts. Inherently non-flammable materials include:

- \* Wool and Leather
- \* Plastics containing sulfur
- \* Pre-ceramic polymers
- \* Aramide blends (like Kevlar)
- \* Carbonized fibers

## 3. Use Safer Flame-Retardant Chemicals

The German Federal Environmental Agency identified three chemicals as unproblematic alternatives to BFRs:

- \* Aluminum trihydroxide
- \* Ammonium polyphosphate
- \* Red phosphorus

Three groups of non-halogenated chemical compounds (containing no bromine or chlorine) already account for 75% of the global market in flame retardants:

Inorganic:

- \* Aluminum trihydroxide
- \* Ammonium polyphosphate
- \* Magnesium hydroxide
- \* Red phosphorus
- \* Zinc borate

Nitrogen-containing:

- \* Melamine

Organophosphorus:

- \* Phosphoric acid
- \* Resorcinol bis(diphenylphosphate)
- \* Tricresyl phosphate
- \* Triphenyl phosphate

Sources: Danish Environmental Protection Agency, Brominated Flame Retardants: Substance Flow Analysis and Assessment of Alternatives, June 1999; Umweltbundesamt (German Federal Environmental Agency), Substituting Environmentally Relevant Flame Retardants: Assessment Fundamentals. ISSN 0722-186X, March 2001; Albinson, B. Alternative ways to achieve fire safety, Swedish Rescue Services Agency, August 2002.

Michael Belliveau, Executive Director  
Environmental Health Strategy Center

P.O. Box 2217, Bangor, Maine 04402  
(207) 827-6331 tel (207) 631-5565 cell  
[mbelliveau@preventharm.org](mailto:mbelliveau@preventharm.org)  
[www.preventharm.org](http://www.preventharm.org)  
(207) 827-5755 fax

David Higby  
348 Quarry Road  
Salem, NY 12865  
PH: (518) 854-3223  
"David Higby" <[dhigby@sover.net](mailto:dhigby@sover.net)>  
Web: [www.eany.org](http://www.eany.org)