

The Ever-More-Toxic Northwest

New research confirms a dire need for precaution.

A laboratory develops a chemical that does something useful. Manufacturers put it into products that make their way into homes, yards, offices, and eventually landfills across the nation. After a few years, it's present in landscapes and bodies everywhere.

Then researchers find evidence that the chemical is dangerous. Public watchdog groups raise the alarm and draft legislation to ban it. The bill slogs through the state Legislature or federal Congress and, if it passes, takes effect years later. By the time the laboratory stops producing the chemical, it has already permeated the environment like something released from Pandora's Box.

This was the sequence with the pesticide DDT, with asbestos building materials, and with the plastic compound PCB. And it may be happening again with a toxic flame retardant called PBDE (polybrominated diphenyl ether).

Since the mid-1900s, petroleum-based plastic products have increasingly replaced less combustible natural materials. PBDE was developed in the early 1970s as an additive for combustible synthetic products to reduce their fire hazard. Manufacturers put it in polyurethane furniture foam, car dashboards, building materials, computers and televisions. The two largest manufacturers of PBDE — Albemarle Corp. of Richmond, Va., and Great Lakes Chemical Corp. of West Lafayette, Ind. — claim that there are no reliable data showing that the chemical is harmful to humans.

But confidence about PBDE's safety is crumbling like old couch foam. Recent studies show that even in minute doses, PBDE — similar in structure to PCB, which was banned for its toxicity in the 1970s — can impair memory, attention, motor skills, learning, behavior and sexual development in laboratory animals. And it's nearly impossible to clean up PBDE because it's bioaccumulative (builds up in bodies over a lifetime), lipophilic (absorbed by oils) and persistent (it doesn't break down in the environment). Yet another chemical designed to protect us actually seems to be poisoning us.

Now, PBDE is everywhere. Tests from Europe to the Arctic indicate the presence of the chemical in people, animals, food and the environment — just about every place scientists have looked. But the highest levels by far are in the U.S., which comprises almost half of the worldwide PBDE market. Over the past decade, manufacturers have added about a billion pounds of PBDE to consumer products. According to EPA scientist Myrto Petreas, levels in humans appear to be doubling every two to five years.

A 2003 study by the Environmental Working Group (EWG) in Oakland, Calif., found an average PBDE concentration of 4,600 parts per billion (ppb) in house dust across the nation. The two samples with the highest levels were in the Pacific Northwest; a home in Portland had 16,366 ppb and a home in Missoula, Mont. had 41,203 ppb. A 2003 EWG study on PBDE in breastmilk from 20 mothers across the nation also yielded abnor-

mally high levels of PBDE in the Northwest. While the study's median PBDE level was 58 ppb, the Oregon sample had 755 ppb and the Montana sample had 1,078 ppb. By comparison, analysis of the breastmilk of women from Japan and Sweden yielded median levels of 1.3 and 2.1 ppb, respectively.

In September 2004, Northwest Environment Watch (NEW) released a study on the levels of PBDE in the breastmilk of Pacific Northwest mothers. Every sample contained high levels of PBDE, with a median of 50 ppb. The highest levels of PBDE were found among the Oregon mothers, with a median of 99 ppb.

Why did the Oregon women have higher

dairy products, but her PBDE concentration was higher than the average. "You always wonder, as a healthy person, how you're exposed to different chemicals," she says. "You buy a new sweater, and you think, 'Hmmm, what am I buying?' Or you go camping and you sleep on one of those foam mats, and you think, 'I'm out in nature, but am I breathing toxic chemicals?' It's an impure, toxic world."

NEW decided to test breastmilk because PBDE accumulates in body fat and breastmilk is an easy fluid to collect. But the presence of the chemical in 100 percent of the samples suggests that every Northwesterner — not just mothers and babies — harbors the chemical. "It's not to say that these chemicals

agreed to stop producing the penta and octa forms of PBDE by the end of 2004. However, the company will continue to produce deca PBDE, which is used mainly in electronics packaging and can break down into the more toxic penta and octa forms. EWG suggests that ceasing production of penta and octa PBDE will be of little help unless manufacturers also stop producing the deca form.

In anticipation of impending legislation limiting PBDE, Great Lakes Chemical has developed an alternative bromine phosphorous-based flame retardant that contractors say is neither toxic nor persistent. Great Lakes Chemical could not be reached for comment.

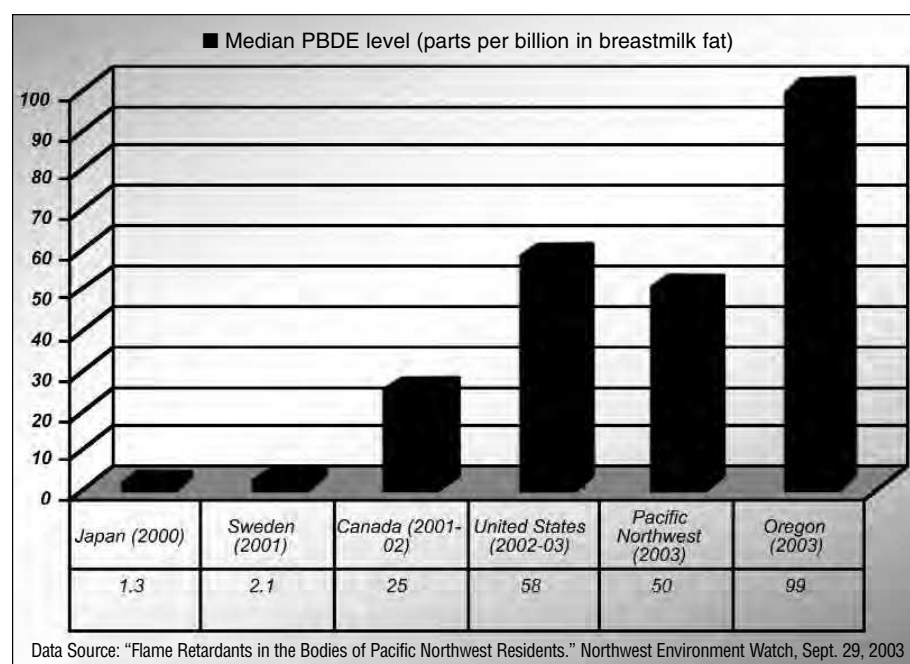
The best long-term solution to preventing persistent toxic chemicals such as PBDE from contaminating our environment is to change the market system that allows its release, NEW reports. State and federal governments can ban PBDE from commerce and monitor humans regularly to track toxic problems before they reach epidemic proportions. EWG recommends that the EPA label products containing PBDE and eventually phase out the compound entirely. It also suggests that the EPA rigorously test the chemicals that could potentially replace PBDE to prevent the release of other toxic chemicals into the environment. "It's better to be safe than sorry, and if we had used the precautionary principle we would not be in this situation," Weiss says.

A precautionary approach would require rigorous safety tests *before* chemicals are released into the market. The European Union has developed a precautionary program called REACH (Registration, Evaluation, and Authorization of Chemicals), which holds manufacturers responsible for proving the safety of their chemicals and helps prevent the distribution of dangerous compounds. If such a program had been in place in the U.S. in the 1970s, PBDE probably wouldn't have made it out of the laboratory — especially given its structural similarities to its toxic predecessor, PCB. But because U.S. laws regulating chemicals are not precautionary, an alternative flame retardant such as that being developed by Great Lakes Chemical might pose yet more risks to humans and the environment.

As for the common consumer, a few small measures can reduce the risk of PBDE contamination. People can avoid products that contain polyurethane furniture foam, cover or replace furniture with exposed foam, and ventilate when removing the foam padding beneath carpets. EWG suggests favoring products with naturally fire-resistant fibers such as cotton and wool. And because PBDE collects in animal fats, people can limit their exposure to the chemical by reducing their consumption of animal fats. NEW stresses that despite the presence of PBDE in breastmilk, breastfeeding is still the healthiest choice for children.

Oregonians can support the upcoming OEC bill banning penta and octa PBDE by contacting their state legislators in January. For more information, visit the OEC website at www.orcouncil.org or the NEW website at www.northwestwatch.org

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OEC PROGRAM DIRECTOR LAURA WEISS

levels than other Northwest mothers? "The short answer is we don't know," says Oregon Environmental Council (OEC) Program Director Laura Weiss. "We're all exposed, but we don't exactly know how or in what proportion."

Clark Williams-Derry, research director for NEW (and a former analyst for EWG), warns against putting too much emphasis on Oregon's high median PBDE level because of the small sample size. Of the 40 Northwest mothers who participated in the study, 10 were from Oregon. "We can't guarantee that the sample is representative of the population at large," Williams-Derry says.

But for Laura Caples Mittelstadt, a Portland-area mother who participated in the study, the results were somewhat alarming. Mittelstadt, 37, an Oregon native, doesn't smoke, eats healthy foods and buys organic

aren't in men's bodies. They probably are," Weiss says. PBDE is so prevalent in household products that there appears to be no way to avoid exposure, the NEW report states.

The findings prompted a surge of proposed legislation to ban or limit PBDE. The two most toxic forms of PBDE, penta and octa, will be legally banned in the European Union this year and in California in 2008. Bills to ban or limit PBDE are being reviewed in six other U.S. states.

The OEC plans to introduce bill in January 2005 to require the state to phase out two forms of PBDE by 2008. But even a legal ban of PBDE may be too little, too late. "You can ban their use, but unfortunately you can't ban their persistence in the environment," Weiss says.

Under pressure from the EPA, Great Lakes Chemical Corporation voluntarily