

## Great Lakes fish face new threat in poison PBDEs

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MUSKEGON -- Toxic flame retardants commonly used in computers, televisions and textiles have accumulated dramatically in Great Lakes fish over the past two decades, prompting legislative efforts to ban the compounds.

The state Legislature in 2004 banned two types of the flame retardants, called polybrominated diphenyl ethers, or PBDEs. Michigan was one of several states to ban the manufacture, use or distribution of penta-BDE and octa-BDE.

But a third type of the chemical, deca-BDE, is still widely used and can break down into the more toxic forms of PBDEs. Environmental activists and some scientists are pushing for a ban on deca-BDE, a persistent toxin that accumulates in the food chain.

"We're trying to head off the next PCB disaster in the Great Lakes," said Mike Shriberg, policy director for the Ann Arbor-based Ecology Center. "This chemical acts a lot like PCBs, is extremely persistent in the environment and bioaccumulates; once it's here it's very hard to get rid of it."

PCBs were a group of chemicals widely used as coolants in electrical transformers until they were banned in 1977. The chemicals, which can cause developmental problems in children and are suspected of causing cancer, are still found in some species of Great Lakes fish. The state warns children and women of child-bearing age to limit consumption of certain fish to avoid ingesting potentially harmful amounts of PCBs.

PBDEs are believed to pose some of the same health threats as PCBs, according to scientific literature.

Though traces of PBDEs have been found in fish, wildlife and humans around the world, the levels found in Americans are much higher than those detected in residents of Europe or Japan.

Some of the world's highest concentrations of PBDEs have been found in Lake Michigan salmon, according to researchers. The concentration of PBDEs also have escalated in Great Lakes walleye and lake trout since 1980, according to scientific data compiled by government agencies and university researchers.

Currently, there are no advisories that provide consumers guidance on whether it is safe to eat Great Lakes fish containing PBDEs. The federal government lists the chemicals as possible cancer-causing agents; studies have shown the chemicals also cause reproductive problems and brain damage in rats.

Rick Rediske, a Grand Valley State University professor studying PBDEs, said the flame retardants seem to be less toxic to humans than PCBs. He said following Great Lakes fish consumption advisories based on PCBs should protect consumers. The state recommends that women and children eat no more than one meal per month of salmon or lake trout from Lake Michigan.

PBDEs were used as flame retardants in an array of consumer products, -- including computers, furniture and drapes -- until several states and nations

began banning the chemicals. Nearly half of all deca-BDE produced worldwide is now used in the U.S., according to the Illinois Environmental Protection Agency. PBDEs get into the environment as dust particles that flake off plastic products and textiles. Once airborne, the chemicals drift in the wind, often settling in the world's largest freshwater basin: the Great Lakes.

The chemicals remain in the environment for years and accumulate as they move up the food chain, from plankton to fish and people and animals who eat fish.

PBDE concentrations in Great Lakes walleye and lake trout increased exponentially from 1980 to 2000, doubling every three to four years, according to data published in the journal *Environmental Science & Technology*.

Rediske said he has found the chemicals in every large fish he sampled in bays along Lake Michigan. He said the state "absolutely" should ban deca-BDE.

"Everything points to the fact that PBDEs are increasing in the food chain and they are chemicals of concern in the Great Lakes," said Rediske, a water resources professor and researcher at GVSU's Water Resources Institute.

"Historically, the Great Lakes collected mercury and PCBs from the atmosphere; now they're collecting PBDEs."

A bill in the state Legislature proposes an immediate ban on the use of deca-BDE in mattresses or furniture. The bill would outlaw the use of the chemical in televisions and computers starting in 2012.

Environmental groups and the Michigan Professional Firefighters Union support the legislation. The Michigan Chemistry Council and the Michigan Association of Fire Chiefs oppose banning deca-BDE.

"Right now, we feel that the science has not justified the banning of deca-BDE," said Jerry Howell, chief executive officer of the Michigan Chemistry Council.

Howell said the three U.S. manufacturers of deca-BDE are developing alternatives to the chemical. He said existing alternatives to deca-BDE developed to date work well on textiles but not as well on plastics.

A 2007 draft state Department of Environmental Quality report recommended banning deca-BDE as soon as manufacturers develop a suitable alternative. Maine and Washington have banned deca-BDE and other several states are considering similar legislation.

Three of Michigan's largest furniture makers -- Steelcase, La-Z-Boy and Herman Miller -- have already replaced deca-BDE with more environmentally friendly flame retardants, Shriberg said.