

PBDEs—the new global toxins

Industrial PCBs and the pesticide DDT were the first to leave a terrible toxic legacy for all future generations on the planet. Now a group of related chemicals known as polybrominated diphenyl ethers (PBDEs) is posing a new risk as these persistent toxins appear in the bodies of humans and animals around the world, from the industrial heartland to the high Arctic.

PBDE levels are rising

In use since the 1970s as fire retardant chemicals in mattresses, furniture and electronic equipment, PBDEs have lingered in the environment. They show up in house dust and leach out of discarded materials in landfills. Over time, they accumulate in animal fat, becoming more concentrated up the food chain. Tests of PBDE levels in women's breast milk have revealed that accumulations are doubling every four to five years. According to a new survey completed in 2005, North American women currently have PBDE levels that are 20-40 times higher than European women, largely because of the greater use of PBDEs on this continent. The increasing levels are troubling because recent research has shown that PBDEs are showing health effects at levels equal to, or even lower than the levels that many people may be carrying in their bodies.

A 2003 study published in the journal *Environmental Health Perspectives* concluded: "This survey clearly indicates that high levels of PBDEs are found in U.S. women and can be transferred to the nursing infants...There are particular concerns especially about infant health because the fetus and the developing child are more sensitive than adults to the effects of chemical compounds, including PBDEs in breast milk and diet."

Marine species affected as well

At the top of the marine food chain, orca whales have alarming amounts of PBDEs in their blubber and the levels are higher still for those whales resident in waters adjacent to industrialized areas of the West Coast. New research has also shown high levels of PBDEs in polar bears, posing another threat to their survival.

The health and environmental effects of PBDEs are still largely unresearched, but studies so far have demonstrated that PBDE can damage thyroid gland function and may also have toxic effects on reproduction. PBDE-treated materials also generate highly carcinogenic dioxins when they burn, creating an additional hazard for firefighters.

European Union, U.S. states enact bans

Action in some areas of the world is showing promising results. In Sweden, where PBDEs have not been used for many years, the levels in breast milk are now falling.

In 2004, the European Union passed legislation to ban the manufacture and use of PBDEs. Several states in the U.S., including California and Maine, have taken similar action, pushing manufacturers to use the alternatives that are readily available where there is a need for fire retardancy.

Some Canadian manufacturers have already discontinued using PBDEs because of the European and U.S. bans, but without a similar ban in Canada, many products containing PBDEs, including foam furniture, computers and other electronic equipment, could still be imported into Canada, increasing the risk.

According to Ake Bergman, a leading PBDE researcher from Stockholm University, "we already know more about PBDEs than we knew about PCBs when we banned them in the 1970s. It's really time to act."



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