



# Focus on the Draft PBDE Chemical Action Plan

from Ecology's Environmental Assessment Program

## Executive Summary

PBDE (polybrominated diphenyl ether) flame retardants are chemical additives that have been found, in recent years, to be releasing from a wide variety of everyday products into the environment and food chain. PBDEs are building up in living organisms, including humans, at steadily increasing levels. The departments of Ecology and Health have drafted a chemical action plan that identifies actions the state may take to reduce threats posed by PBDEs.

Penta-BDE and Octa-BDE, two of the three commercial mixtures of PBDEs, have been found to cause health problems in lab animals at higher levels of PBDEs than have been detected in humans so far. The third commercial mixture, Deca-BDE, is considerably less toxic in its original state but has been shown in studies to break down into furans and harmful chemical forms similar to those of Penta-BDE and Octa-BDE.

Penta-BDE and Octa-BDE will be voluntarily phased out of production at the end of 2004. Penta-BDE is typically used in foams for sofas and chair seat pads; Octa-BDE is typically used in high-impact plastics, such as in telephones, kitchen appliances and computers.

Deca-BDE accounts for approximately 80 percent of the PBDE market, and its use is anticipated to increase at a rate of 2 percent annually. Additionally, a pending revision of federal regulations on flame retardants could substantially increase the market for Deca-BDE in the near future. Deca-BDE is typically used in housing for electronic products such as computers and stereos, coatings for wire and cable, and carpets and draperies; it is not used in clothing.

PBDEs have been measured in a variety of human tissues, such as blood, fat and breast milk in people around the world. The highest levels of PBDEs in human tissues have been found in Canada and in the U.S., which is the largest producer and consumer of PBDE products. Levels of PBDEs in Americans are 10 to 100 times higher than levels reported for Europe and Japan.

Although PBDEs have been detected in everything from food to house dust to indoor air, exactly how people are exposed to PBDEs is an area of ongoing study. Studies in Canada and the United Kingdom suggest that more than 90 percent of a person's total intake of PBDEs is through diet. PBDEs are believed to migrate from products into the air and dust that is then consumed by insects and moves up the food chain from there. PBDEs build up in the body at steadily increasing levels because they reside in fatty tissue and are not processed out of the system.

Given the long life of many PBDE products and the length of time PBDEs can remain in the environment, exposure can continue for years and even decades after the production or sale of a product.

Ecology and Health recommend a strategy that guides the handling and disposal of existing PBDE products and reduces the manufacture and sale of new PBDE products.

Even if no new PBDE products were produced or sold, merely dealing with existing products will require programs to limit human exposure and prevent the continued release of PBDEs into the environment for decades to come. The solution could mean changes to everything from recycling practices to landfills. Each additional year that PBDE products are produced and sold will extend that timetable – and any related costs – by a decade or more.

In the case of Penta-BDE and Octa-BDE, the production of new products will end soon with the exhaustion of existing stockpiles of chemicals, whose shelf life is less than a year. In the case of Deca-BDE – whose levels are steadily rising and could grow even faster if the chemical is used to meet new standards for reducing flammability in residential upholstery products – Ecology and Health recommend prohibiting its current use in consumer electronics products and its future application in residential textile products. Biological monitoring for PBDEs in blood and procedures for handling and disposal of PBDE-containing products should be explored to limit exposure to humans and to the environment.

## Summary of recommendations

The Washington State departments of Ecology and Health recommend that:

- The Department of Labor and Industries (L&I) develop and disseminate recommendations for minimizing occupational exposure to PBDE flame retardants.
- State agencies coordinate with federal agencies on national monitoring of PBDE levels and explore whether additional regional monitoring is needed.
- The Department of Health (DOH) and L&I implement a study of workplace exposure to PBDEs in collaboration with the Centers for Disease Control.
- Existing state monitoring programs be expanded to include testing for PBDEs.
- The Department of Ecology (Ecology) test sewage sludge (also known as biosolids) for PBDEs.
- Ecology examine and revise or add disposal and recycling practices for products that contain PBDEs in order to protect human health and the environment.
- DOH develop and communicate ways for the general population to minimize exposure to PBDEs.
- Other government agencies and research institutions conduct research on Deca-BDE debromination in various environments; the fate of PBDEs in the landfill environment; alternative, non-brominated flame retardants, including their current presence in the environment, people and other organisms, to establish a baseline for future studies; and product design and other solutions to chemical fire retardants.
- The Washington State Legislature prohibit the manufacture, distribution, or sale of new products containing Penta-BDE and Octa-BDE in Washington State as of July 2006.
- The Legislature prohibit the manufacture, distribution and sale of new consumer electronics products containing Deca-BDE as of July 2008 and prohibit the use of Deca-BDE in new upholstered fabric intended for the home or workplace that is manufactured, distributed or sold in Washington State as of July 2008. Defining the list of products to be prohibited may require further study by Ecology, DOH and the Legislature.
- The Legislature restricts the state's purchase of PBDE products in appropriate contracts.

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