

Alternatives Assessment Examples Review

Document Title: Washington State Polybrominated Diphenyl Ether (PBDE) Chemical Action Plan: Final Plan

Link to Document: <https://fortress.wa.gov/ecy/publications/publications/0507048.pdf>

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Purpose of the Report: This report is the final version of the Chemical Action Plan (CAP) for the class of flame retardants called polybrominated diphenyl ethers, or PBDEs. It is the second CAP as part of the Department of Ecology (Ecology)'s *Proposed Strategy to Continually Reduce Persistent, Bioaccumulative Toxics (PBTs) in Washington State* (issued December 2000). In January 2004, Governor Locke directed Ecology, in consultation with the state's Department of Health, to investigate and recommend options to reduce the threat of PBDEs in the environment. Later in December 2008, the final report "Alternatives to Deca-BDE in Televisions and Computers and Residential Upholstered Furniture"¹ was published.

Report Summary: With production of Penta- and Octa-BDE discontinued, Deca-BDE becomes the focus of the study. Three new chapters are added to the CAP: (1) a review on studies of the degradation of Deca-BDE; (2) an alternatives assessment; and (3) a cost-benefit analysis.

Key Findings:

Identification of alternatives: The sources used in the report to identify Deca-BDE alternatives include a survey of electronics companies (telephone and email interviews), existing reports, and flame-retardant product information from chemical manufacturers (websites). The report provides a list of reports used to identify alternatives to Deca-BDE. A table presents production information and information related to tracking programs for Deca-BDE and alternatives. This table also illustrates other data gaps in information about alternatives, such as information on their production, use, and tracking mechanisms. It presents an extensive review of existing literature, and the rationale for the scope of alternatives is explained well in this report.

Human health hazard: The human health hazard potential of Deca-BDE and Deca-BDE alternatives is presented in a table. A brief description of the toxicity, persistence, and bioaccumulation potential for each alternative and for Deca-BDE is included in the report. Toxicity profiles for each chemical are included in the appendix as well. The human health hazard assessment identifies the hazard traits of greatest concern and the most sensitive toxic effects. In cases where there are no available toxicity studies for a health effect, "No/insufficient Information" is indicated instead of the Low, Medium, or High rank in the comparison table. The table also ranks the amount of toxicity information available.

Data gaps and uncertainties: The report is transparent about uncertainties of data and rationales for decisions made. It identifies and documents clearly the source of uncertainty, the source of variability, the underlying

¹ This alternatives assessment report is available at <https://fortress.wa.gov/ecy/publications/documents/0907041.pdf>. However, the key findings presented in this commentary are based on the review of the 2006 Washington State PBDE CAP report.

key assumptions, and the limitations due to uncertainty and variability. For purposes of this study, “uncertainty” and “variability” are defined in the report.

Economic impacts: In Chapter 6, the report discusses the potential cost and human health benefits associated with a statewide ban on the use of Deca-BDE in electronic casings by two different approaches: the “Business Model” and the “Individual Model.” The Business Model attempts to develop estimates of the overall costs to Washington businesses, based on survey responses from those businesses, to compare to the overall benefits. The Individual Model attempts to estimate the average lifetime expenditures for TVs and computer monitors by Washington State consumers. The average benefits to consumers are then compared to the estimated minimum price increase for electronic purchases.

For potential health benefits, the report focuses on the human health benefits category. The report presents a model (Figure 10) in a seven-step process to develop estimates for potential health benefits. The seven-step process includes: (1) hazard assessment, (2) dose-response relationships, (3) exposure assessment, (4) population at risk, (5) health benefits estimates, (6) benefit valuation, and (7) present value estimates. This report also clearly documents the assumptions, rationale, uncertainty, and data gaps associated with estimating these potential costs and human health benefits.