
Children's Environmental Health Research Findings
September 2015

Topic: Lead in Tap Water

Title: Human health risk associated with brominated flame-retardants.

Conclusion: Potentially harmful concentrations of brominated flame-retardants and other toxicants occur in fish and fish products.

Authors: Lyche JL, Rosseland C, Berge G, Polder A.

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Abstract:

The purposes of this review are to assess the human exposure and human and experimental evidence for adverse effects of brominated flame-retardants with specific focus on intake from seafood. The leakage of brominated flame-retardants from consumer products leads to exposure of humans from fetal life to adulthood. Fish and fish products contain the highest levels of brominated flame-retardants and dominate the dietary intake of frequent fish eaters in Europe, while meat, followed by seafood and dairy products accounted for the highest US dietary intake. House dust is also reported as an important source of exposure for children as well as adults. The levels of brominated flame-retardants in the general North American populations are higher than those in Europe and Japan and the highest levels are detected in infants and toddlers. The daily intake via breast milk exceeds the RfD in 10% of US infants. Brominated flame-retardants including PBDEs, HBCDs and TBBP-A have induced endocrine-, reproductive- and behavior effects in laboratory animals. Furthermore, recent human epidemiological data demonstrated association between exposure to brominated flame-retardants and similar adverse effects as observed in animal studies. Fish including farmed fish and crude fish oil for human consumption may contain substantial levels of brominated flame-retardants and infants and toddlers consuming these products on a daily basis may exceed the tolerable daily intake suggesting that fish and fish oil alone represent a risk to human health. This intake comes in addition to exposure from other sources (breast milk, other food, house dust). Because potential harmful concentrations of brominated flame-retardants and other toxicants occur in fish and fish products, research on a wider range of products is warranted, to assess health hazard related to the contamination of fish and fish products for human consumption.