

PBDE flame retardant levels in Australian aquatic environments

Toms L, Harden F, Mortimer M, Symons R, Stevenson G and Gaus C 2006, *Assessment of concentrations of polybrominated diphenyl ether flame retardants in aquatic environments in Australia*, Australian Government Department of Environment and Heritage, Canberra

The report is available at the Department of Environment and Water Resources website:
<http://www.environment.gov.au/settlements/publications/chemicals/bfr/aquatic.html>

The study involved the testing of samples from 39 aquatic locations (totalling 46 sites) from all States and Territories of Australia. The samples represented a variety of land uses including remote, agricultural, urban, urban/industrial and industrial and a range of salinities.

PBDEs were detected at 35 of the 46 sites with ranges from non-detect to 60,900 pg.g⁻¹ dry weight. Five sites recorded over 10,000 pg.g⁻¹: two in Port Phillip Bay, two in the Parramatta River and one in Port Jackson West.

TBBP-A was analysed for in five samples, with only one detect in the Parramatta River. Due to the small sample size, little can be drawn from this result.

The sites with the highest concentrations of PBDEs were estuaries with high urbanisation/industrialisation with marine and freshwater locations having lower than estuarine concentrations on average.

Congeners

In 86% of sediment samples, the congener profile was dominated by BDE-209.1 One clear exception to this was Port Phillip Bay, which was dominated by BDE-183.2

International comparisons

The PBDE concentrations were lower than that found in studies of sediments in industrialised northern hemisphere countries. The maximum concentrations found in this study were comparable to the minimum concentrations found in European and Asian countries. However, the Port Phillip Bay that was dominated by BDE-183 had a level of BDE-183 ((31,100 10,000 pg.g⁻¹ dw) that was the highest ever reported (to the knowledge of the authors).

1 Decabromodiphenyl ether

2 2,2',3,4,4',5',6-Hexabrominated diphenyl ether