Decabromodiphenylether and hexabromocyclododecane in wild birds from the United Kingdom, Sweden and The Netherlands: Screening and time trends

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The brominated flame retardant decabromodiphenylether (DBDE) was analysed in wild birds to identify the most suitable species for monitoring time trends in DBDE contamination. This information was later used for the design of a 10-year trend study on DBDE in the European Union. DBDE was measured in muscle tissue, liver, and eggs from 10 terrestrial and four aquatic bird species. DBDE was detected in 47% of the terrestrial bird samples (nine species) and in 9% of the aquatic bird samples (six species). Peregrine falcon and sparrowhawk specimens were selected as most suitable species to determine temporal trends of DBDE. For sparrowhawks, no significant change in DBDE concentrations between 1973 and 2001 was found, although in later years more DBDE concentrations were above the detection limit. Peak DBDE levels measured in peregrines in 1995, were followed by a decline in concentrations until 2001. The same species were used for a trend study on hexabromocylcododecane (HBCD). Twenty-four percent of peregrine falcon eggs and 12% of sparrowhawk muscle samples demonstrated measurable HBCD residues. Three diastereomers of HBCD were analysed and the a-diastereomer was the predominant one in most samples. No clear time trends were observed for HBCD in either species. This study demonstrated that these DBDE and HBCD are bioavailable to birds of Northern Europe, although bioaccumulation seems to occur to a limited extent.

Keywords: Decabromodiphenylether, Hexabromocyclododecane, Diastereomers, Birds, Time trend, Europe

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