

**P.36 Substance flow-based exposure assessment for HBCD from a Life-cycle perspective in Japan.**

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**Abstract:** The present study aims to develop a risk reduction policy for chemicals, considering a product life-cycle. Environmental emissions from end-products containing brominated flame retardants (i.e., HBCD) for the period 1986-2030, which is currently undergoing a risk assessment has been estimated by substance flow analysis (SFA). Through the investigation of quantitative HBCD life cycle, estimated HBCD stock in the use phase shows a continuous increase, indicating that emissions from the materials containing HBCD will be potentially long-term sources of pollutants leaching to the environment. In Japan, 571 kg/year and 41 kg/year of HBCD was calculated to emit to the atmospheric and aquatic environment in 2000, respectively. This corresponds to 0.03 % of the consumed HBCD quantity in Japan. These environmental emissions of HBCD were increasing rapidly until 2011. Using a multimedia fate model, where the estimated HBCD emission were used for the input parameter and a simple pharmacokinetic model, intakes of adults through life cycle of HBCD were converted to predicted body burdens and compared with the results observed from Japanese human milk. Predictions compared well with those observed for HBCDs for the period 1986-2005. SFA focuses on the emission from production to waste process (i.e., life cycle) of target chemicals and thus, this estimation may cover whole exposure pathways. The present study gives an insight to obtain basic information for long term measures toward strategic chemical management considering their life cycle.