

Format for submitting pursuant to Article 8 of the Stockholm Convention the information specified in Annex E of the Convention

Introductory information	
Name of the submitting Party/observer	Switzerland
Contact details (name, telephone, e-mail) of the submitting Party/observer	Georg Karlaganis Federal Office for the Environment Telephone +41313226955 georg.karlaganis@bafu.admin.ch
Chemical name (as used by the POPS Review Committee (POPRC))	Pentabromodiphenyl ether
Date of submission	25.1.2005

(a) Sources, including as appropriate (provide summary information and relevant references)	
(i) Production data:	
Quantity	
Location	
Other	
(ii) Uses	
(iii) Releases:	
Discharges	
Losses	
Emissions	
Other	

(b) Hazard assessment for endpoints of concern, including consideration of toxicological interactions involving multiple chemicals (provide summary information and relevant references)

K0582396 290705

For reasons of economy, this document is printed in a limited number. Delegates are kindly requested to bring their copies to meetings and not to request additional copies.
--

(c) Environmental fate (provide summary information and relevant references)	
Chemical/physical properties	
Persistence	
How are chemical/physical properties and persistence linked to environmental transport, transfer within and between environmental compartments, degradation and transformation to other chemicals?	
Bio-concentration or bio-accumulation factor, based on measured values (unless monitoring data are judged to meet this need)	

(d) Monitoring data (provide summary information and relevant references)	

(e) Exposure in local areas (provide summary information and relevant references)	
- general	
- as a result of long-range environmental transport	
- information regarding bio-availability	

(f) National and international risk evaluations, assessments or profiles and labelling information and hazard classifications, as available (provide summary information and relevant references)

1) Substance flow analysis of selected brominated flame retardants: PBDE and TBBPA

Published by the Swiss Agency for the Environment, Forests and Landscape (now: Federal Office for the Environment), Bern, 2002

Copy included

Abstract: Brominated flame retardants (BFRs) are synthetic additives, which are used above all in electrical and electronic appliances, and in construction materials. Over recent decades, global consumption of the four flame retardants that are examined here (penta-, octa- and decaBDPE, and TBBPA) has almost doubled. The properties of some BFRs are typical of persistent organic pollutants (POPs), and these substances are suspected of being carcinogenic and of having oestrogenic activity. The present study, carried out in Switzerland, shows via which goods BFRs are imported, exported, used and disposed of, and the ways in which BFRs get into the environment. The study is based on data drawn from the literature, and on our own estimates. Flow chart analyses for the four groups of substances show where there are gaps in the data and where there is a need for future action and research.

2) L. Morf, J. Tremp, R. Gloor, Y. Huber, M. Stengele, M. Zennegg

"Brominated Flame Retardants in Waste Electrical and Electronic Equipment: Substance Flows in a Recycling Plant"

Environ. Sci. Technol. 2005, 39, 8691-8699

Copy included

Abstract: Brominated flame retardants (BFRs) are synthetic additives mainly used in electrical and electronic appliances and in construction materials. The properties of some BFRs are typical for persistent organic pollutants, and certain BFRs, in particular some polybrominated diphenyl ether (PBDE) congeners and hexabromocyclododecane (HBCD), are suspected to cause adverse health effects. Global consumption of the most demanded BFRs, i.e., penta-, octa-, and decaBDE, tetrabromobisphenol A (TBBPA), and HBCD, has doubled in the 1990s. Only limited and rather uncertain data are available regarding the occurrence of BFRs in consumer goods and waste fractions as well as regarding emissions during use and disposal. The knowledge of anthropogenic substance flows and stocks is essential for early recognition of environmental impacts and effective chemicals management. In this paper, actual levels of penta-, octa-, and decaBDE, TBBPA, and HBCD in waste electrical and electronic equipment (WEEE) as a major carrier of BFRs are presented. These BFRs have been determined in products of a modern Swiss recycling plant applying gas chromatography/electron capture detection and gas chromatography/mass spectrometry analysis. A substance flow analysis (SFA) technique has been used to characterize the flows of target substances in the recycling process from the bulk WEEE input into the output products. Average concentrations in small size WEEE, representing the relevant electric and electronic appliances in WEEE, sampled in 2003 amounted to 34 mg/kg for pentaBDE, 530 mg/kg for octaBDE, 510 mg/kg for decaBDE, 1420 mg/kg for TBBPA (as an additive), 17 mg/kg for HBCD, 5500 mg/kg for bromine, and 1700 mg/kg for antimony. In comparison to data that have been calculated by SFA for Switzerland from literature for the 1990s, these measured concentrations in small size WEEE were 7 times higher for pentaBDE, unexpectedly about 50% lower for decaBDE, and agreed fairly well for TBBPA (as an additive) and octaBDE. Roughly 60% of the total bromine input determined by SFA based on X-ray fluorescence analysis of the output materials of the recycling plant cannot be assigned to the selected BFRs. This is an indication for the presence of other brominated substances as substitutes for PBDEs in electrical and electronic equipment. The presence of BFRs, in particular PBDEs in the low grams per kilogram concentration range, in the fine dust fraction recovered in the off-gas purification system of the recycling plant reveals a high potential for BFR emissions from WEEE management and point out the importance for environmentally sound recycling and disposal technologies for BFR containing residues.

(g) Status of the chemical under international conventions

