# Canada's Comments on the POPs Review Committee Draft Risk Profiles and Draft Risk Management Evaluations July 2007

## Risk Profiles

### Short-chain chlorinated paraffins:

Consideration should be given to adding new experimental information (Thompson and Noble 2007 in UK 2007) on the aerobic and anaerobic biodegradation of SCCPs in both freshwater and marine sediments, which provides evidence that they are persistent in sediments.

Using 14C-labelled n-decane and n-tridecane 65% wt Cl products, and basing their experiments on the OECD 308 Test Guideline (Aerobic and anaerobic transformation in aquatic sediment systems), Thompson and Noble (2007, in UK 2007) estimated that the mean half-lives for a C10-13, 65% wt Cl product to be 1630 days in freshwater sediments and 450 days in marine sediments under aerobic conditions. Little or no mineralization was noted in anaerobic sediments, indicating that SCCPs are persistent in sediments.

References:

Thompson R. S. and Noble H. (2007). Short-chain chlorinated paraffins (C10-13, 65% chlorinated): Aerobic and anaerobic transformation in marine and freshwater sediment systems. Draft Report No BL8405/B. Brixham Environmental Laboratory, AstraZeneca UK Limited.

UK. 2007. Updated Risk Assessment of Alkanes, C10-13, Chloro. CAS Number: 85535-84-8. EINECS Number: 287-476-5. Combined Draft of April 2007. 139 pp.

### Commercial Octa-BDE:

Comments relate mainly to information presented on bioaccumulation.

In the Executive Summary and the Synthesis of the Information sections, the report cites elimination rates from some vertebrates and invertebrates as being in the range of 0.01 to 0.5 $d^{-1}$ (half life of 14-70 d) for PBDEs in Comm-OctaBDE. The information source for the value, 0.5, is unclear. The correct values should possibly be 0.05 $d^{-1}$. If these data relate just to hexaBDE, this probably should be noted.

Some data could be reported on depuration half lives for hepta and hexaBDEs, as calculated by Tomy et al. (2004).

Most of the studies identified in the report relating to bioaccumulation seem to be focused on hexaBDE, which is reflective of the literature. Very high bioaccumulation potential for hexaBDE has been established and accepted. In section 2.2.2 - Bioaccumulation, it is noted that biomagnification has been demonstrated for hexa and heptaBDE and the reference Sormo et al (2006) is provided. This study did not calculate a BMF for heptaBDE, but did so just for hexa and deca.

It may be desirable to elaborate further on bioaccumulation and biomagnification potential of the higher BDEs. For example, new data from Burreau et al (2006) is relevant to hepta- to decaBDEs, as are studies by Huwe and Smith (2007) and Hakk and Letcher (2003). Some new data indicating higher levels of higher brominated DEs in biota could be cited, for example Bureau et al. 2006, Chen et al. 2007.

References which could be added:

Burreau, S., Y. Zebuhr, D. Broman, and R. Ishaq. 2006. Biomagnification of PBDEs and PCBs in food webs from the Baltic Sea and the northern Atlantic Ocean. Sci. Total Environ. 266: 659-672.

Chen, D., B. Mai, J. Song, Q. Sun, Y. Luo, X. Luo, E. Zeng and R. Hale. 2007. Polybrominated diphenyl ethers in birds of prey from northern China. Environ. Sci. & Tech.

Hakk, H. and R. Letcher. 2003. Metabolism in the toxicokinetics and fate of brominated flame retardants - a review. Environ. Int. 29: 801-828.

Huwe, J. and D. Smith. 2007. Accumulation, whole-body depletion and debromination of decabromodiphenyl ether in male sprague-dawley rats following dietary exposure. Envrion. Sci. & Technol.

Tomy, G., V. Palace, T. Halldorson, E. Braekevelt, R. Danell, K. Wautier, B. Evans, L. Brinkworth, and A. Fisk. 2004. Bioaccumulation, biotransformation and biochemical effects of brominated diphenyl ethers in juvenile lake trout. Environ. Sci. Technol. 38: 14986-1504.

## Risk Management Evaluations

### Hexabromobiphenyl:

In section 1.5, the current text on Canadian actions appearing in the 5th paragraph should be replaced by the following:

In Canada Polybrominated Biphenyls that have the molecular formula $C_{12}H_{(10-n)}Br_n$, in which "n" is greater than 2, appear on Schedule 1 (List of Toxic Substances) of CEPA 1999, and are subject to prohibitions on their manufacture, use, sale, offer for sale and import. In addition, these substances appear on Schedule 3, Part 1 (Export Control List – Prohibited Substances) of CEPA 1999, effectively prohibiting their export, except for the purpose of their destruction.

Similarly, the text in section 3 (7th paragraph) regarding Canadian actions should be replaced by the following:

In Canada, Polybrominated Biphenyls that have the molecular formula $C_{12}H_{(10-n)}Br_n$, where "n" is greater than 2, appear on Schedule 1 (List of Toxic Substances) of CEPA 1999, and are subject to prohibitions on their manufacture, use, sale, offer for sale and import. In addition, these substances appear on Schedule 3, Part 1 (Export Control List – Prohibited Substances) of CEPA 1999, effectively prohibiting their export, except for the purpose of their destruction.

**Perfluorooctane sulfonate (PFOS):**

Canada has proposed regulatory action to prohibit the manufacture, use, sale and import of PFOS and related substances as well as products and formulations containing these chemicals. The regulations provide exemptions for the continued use of PFOS in the semiconductor industry and the photography industry as Canada is not aware of alternatives for these applications. The addition of PFOS to Annex A of the Convention is inconsistent with Canada's proposed domestic regulations.

**Commercial Pentabromodiphenyl ether (PeBDE):**

It is unclear why it was proposed to add "brominated diphenylethers with 4-5 bromines" to the Stockholm Convention Annex A, rather than those with 4-6 bromines. The current proposal specifically excludes hexa-BDE. The percentage of hexa-BDE in the PentaBDE commercial mixture is 4-12%.

Other international and domestic initiatives have included hexa homologues. For example, in Canada, the tetra, penta and hexa homologues have been identified as persistent and bioaccumulative and have been recommended for addition to the Virtual Elimination List under the *Canadian Environmental Protection Act, 1999*.