

IPEN Views of POPRC Drafts

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1 May 2008

Alpha hexachlorocyclohexane and Beta hexachlorocyclohexane (Alpha HCH and Beta HCH)

Draft Risk Management Evaluation for alpha HCH and beta HCH

http://www.pops.int/documents/meetings/poprc/request/Comments_2008/DraftRME_a-HCH.pdf

These toxic isomers are inextricably linked to lindane production and serve no use as final end products. Both should be listed in Annex A. IPEN advocates the listing of alpha HCH, beta HCH, and lindane with no specific exemptions due to the wide variety of cost-effective alternatives to pharmaceutical uses of lindane that are more efficacious. If certain countries need a little more time to implement these alternatives, then a one-time transitional exemption could be granted for all three isomers.

Commercial octabromodiphenyl ether (C-OctaBDE)

Draft Risk Management Evaluation for c-OctaBDE

http://www.pops.int/documents/meetings/poprc/request/Comments_2008/DraftRME_OctaBDE.pdf

C-OctaBDE should be listed in Annex A and Annex C with no specific exemptions. C-OctaBDE has already been widely subjected to control measures consistent with elimination of production, use, export, and import as outlined in Annex A. At POPRC3 in November 2007, the Committee concluded that components of the c-OctaBDE mixture are produced in the environment by debromination of c-DecaBDE. This means that Annex C listing is needed because components of c-OctaBDE are unintentionally formed through debromination of higher substituted congeners, including commercial decabromodiphenyl ether (c-DecaBDE) which also has the potential for long range transport. Annex C listing of c-OctaBDE requires control measures that address c-DecaBDE to prevent further formation of components of the c-OctaBDE mixture and other BDE congeners in the environment. See Annex 1 for more information.

Pentachlorobenzene (PeCB)

Draft Risk Management Evaluation for PeCB

http://www.pops.int/documents/meetings/poprc/request/Comments_2008/DraftRME_PeCB.pdf

PeCB should be listed in Annex A and Annex C. The key error in the current draft Risk Management Evaluation is the claim promoted by the chlorine industry that forest fires are a major source of dioxins and furans (PCCD/F) and thereby PeCB. This is inconsistent with numerous data that shows that forest fires are not major dioxin sources. The paragraph claiming forest fires as a major PeCB source should be deleted from the draft Risk Management Evaluation. See Annex 2 for more information.

Perfluorooctane sulfonate (PFOS)

Secretariat letter on PFOS

http://www.pops.int/documents/meetings/poprc/request/recommendation/Recommendation_Letter_PFOS_e.pdf

IPEN supports the listing of PFOS in Annex A. In contrast, Annex B is best suited to substances that have an essential public health use or some other equivalently essential use since this type of listing restricts uses instead of eliminating them. Currently, only DDT is listed in Annex B.

Short chain chlorinated paraffins (SCCPs)

Draft Risk Profile for SCCPs

http://www.pops.int/documents/meetings/poprc/request/Comments_2008/DraftRiskProfile_SCCPs.pdf

We are disappointed that SCCPs did not proceed to the Annex F evaluation at POPRC3. Despite the POPRC's obligation to evaluate the SCCPs Draft Risk Profile in a scientific manner using the criteria outlined in Annex E, a political discussion took place that revealed the difficulties of prohibiting a currently used substance such as SCCPs. Ironically, the socio-economic elements that underlined much of the concerns are precisely the elements, which Annex F takes up. We believe the SCCPs meet all Annex E criteria and strongly support efforts to finalize the Risk Profile and begin Annex F evaluation. See Annex 3 for more information.

Annex 1. Why octaBDE needs to be listed in Annex C

The proposal for an Annex C listing of octaBDE will raise questions about the degree of BDE debromination in the environment. When debromination of BDEs was first reported, many disregarded it as an in vitro phenomenon and not relevant to environmental conditions. However, the Committee has agreed in the c-OctaBDE Risk Profile that debromination is occurring in aquatic organisms, mammals, and birds and that components of the c-OctaBDE mixture are produced in the environment by debromination of c-DecaBDE. This debromination has been found to occur in fish¹, by photolysis^{2 3 4 5 6 7}, and by the action of bacteria in sewage sludge^{8 9}. Recently c-DecaBDE was found to debrominate under normal environmental conditions in house dust forming three c-nonaBDE congeners and several c-OctaBDE congeners¹⁰. Furthermore, there is a sizeable body of data on the properties of c-DecaBDE that should raise concerns about its debromination to form components of c-OctaBDE including: decaBDE is present in humans^{11 12 13 14 15}, decaBDE is found in biota^{16 17 18}; decaBDE can be absorbed by dietary intake in carp, lake trout and rats^{19 20 21 22}; and high concentrations in terrestrial animals suggest that decaBDE can bioaccumulate..

These studies indicate the need for the Committee to seriously take up the question of an Annex C listing for c-OctaBDE. Evaluations of this type carry various uncertainties due to availability of data, however, the Convention reminds the POPRC in Article 8 para 7a that, "Lack of full scientific certainty shall not prevent the proposal from proceeding."

This statement codifies the Convention commitment to use available information in protecting public health from the harms caused by POPs.

Annex 2: Forest fires are not a major source of dioxins

The draft PeCB Risk Management Evaluation cites data from forest fire simulations in the US and concludes that forest fires could be a major source of both dioxins and PeCB. Given the large discrepancy between simulations (US experience) and actual measurements (Australia, Spain, Canada) and the fact that the EC does not consider forest fires to be major dioxin sources, this text cannot be scientifically justified, despite the insistence of the chlorine industry. The draft should not contain a blanket statement that forest fires could be a major source of PeCB. Forest fires are simply not a major source of dioxins or PeCB in the world. Note the following evidence:

1. A TNO report on dioxin emissions in several EU candidate countries does not list forest fires as major sources.²³

Countries examined included Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovak Republic, Slovenia, and Turkey. The largest contributions of dioxin emissions to air were from incineration of wastes, cement kilns, and iron ore sintering. Forest fire emissions of dioxins were estimated at 5 ug I-TEQ/ton using the UNEP dioxin toolkit. In contrast, dioxin emissions from landfill fires were estimated at 1000 ug I-TEQ/ton.

2. The European Commission does not regard forest fires as major dioxin sources

Martinez et al. (2000) analyzed vegetation and soils in forest fire areas in Spain and concluded that “natural fires seem not to be an important source of dioxin-like compounds.”²⁴ See these references:

Wenborn, M., King, K., Buckley-Golder, D., Gascon, J., 1999. Releases of Dioxins and Furans to Land and Water in Europe. Final Report. Report produced for Landesumwamtamt Nordrhein-Westfalen, Germany on behalf of European Commission DG Environment. September 1999

Quass, U., Fermann, M., Broker, G., 2000. The European Dioxin Emission Inventory, Stage II. Vol. 3: Assessment of dioxin emissions until 2005. Nordrhein-Westfalen, Germany: Landesumweltamt NRW. December 2000

Quass, U., Fermann, M., 1997. Identification of Relevant Industrial Sources of Dioxins and Furans in Europe (The European Dioxin Inventory). Final Report No. 43, Essen, Germany: Landesumweltamt Nordrhein-Westfalen, Germany.

3. Studies from Canada indicate that forest fires are not major dioxin sources

Van Oostdam (1995) found no detectable dioxins in three soil samples and four ash samples taken immediately after a forest fire in British Columbia, Canada.²⁵

Ikonomou et al. (1999) reported that “data do not show levels high enough and/or distinct patterns that would suggest that the sediments in the streams examined have been impacted by PCDDs/Fs produced from the forest fires.”²⁶

Gabos et al. (2001) reported only very low concentrations of dioxins in sediments following extensive forest fires in Canada.²⁷

4. Studies from Australia indicate that forest fires and bush fires are not major dioxin sources

A recent study of dioxin emissions from crop and bush fires in Australia revised the estimated contribution from these sources downwards by 70%.²⁸ An Australian government report notes that the measured dioxin emissions in the field were substantially different from laboratory tests used to estimate inventory values for various open burning sources.²⁹ Total dioxin emissions to air from these sources was revised downward from 1,708 TEQ to 152 TEQ. For forest fires and wildfires the previous estimates from 2002 were 7 – 400 g TEQ/y. The new results after actual measurements were conducted ranged from 1.2 – 15.2 g TEQ/y.

Measuring PCDD/F emissions at 20 sites across Australia, Ivory and Mobbs (2004) found dioxin emissions from laboratory tests were up to ten times higher than those from field measurements but were comparable to other laboratory tests.³⁰ Meyer et al. (2004) elaborated further as follows:³¹ “Laboratory tests do not adequately simulate the combustion processes occurring in the field. ... The key difference between field and laboratory emissions may be the duration for which the smoke plume remains at high temperature. In field burns, air entrained into the smoke plume rapidly cools to temperatures that will not support the heterogeneous reactions required for dioxin synthesis.”

Annex 3. SCCPs satisfy Annex E criteria

NGOs consider that the SCCPs Draft Risk Profile provides sufficient data to demonstrate that SCCPs exhibit long-range environmental transport, and that their persistence, bioaccumulation and toxicity are serious enough to warrant global action. Monitoring data has demonstrated the long-range environmental transport of SCCPs, in that they have been measured in Arctic air and sediment,³² Arctic animals including ringed seal, beluga whales, walrus, char, and seabirds,³³ and in the breast milk of Inuits.³⁴ SCCPs should proceed to the next stage of assessment.

Very little toxicological information is available from studies in humans and much of the available animal data does not allow a direct comparison from toxicological endpoint of the effects of SCCPs.³⁵ However, the Scientific Committee on Toxicity, Ecotoxicity and the Environment Opinion on the Risk Assessment of Short Chain Length Chlorinated Paraffins³⁶ found that the alveolar/bronchiolar carcinomas in male mice should not be discounted and that finding of lung tumours in male mice may be of importance for humans.

In the Technical Peer Reviews on Short Chained Chlorinated Paraffins (SCCPs) Dossier Submitted under the UNECE-LRTAP POPs Protocol, the authors³⁷ highlighted the relatively high concentrations of SCCPs (100-770 mg/kg wet wt.) in beluga and narwhal

fat in Canada and Greenland. They stressed the relevance to exposure through traditional foods of Arctic communities, pointing out that Aboriginal peoples living in the Arctic may be exposed to SCCPs at concentrations greater than the WHO health guideline of 11 µg/kg bw for neoplastic effects (tumor formation).

In regards to environmental impacts, SCCPs are highly toxic to aquatic invertebrates and are also highly toxic to algae on which many species including fish depend. There is no information on which to assess toxicity to marine mammals and the marine food chain. There has been no consideration of the relevance of the liver, thyroid and kidney cancers found in rat and mouse studies to the long term exposure of any of the 1500 other rodent wildlife species worldwide.

The attempt by industry to establish levels of concern in regards to POP chemicals like SCCPs ignores crucial questions relating to the timing and duration of the exposure, age, nutritional and reproductive status, enzyme function, as well as the additive or synergistic interactions with other substances in the environment.

¹ Stapleton HM, Alae M, Letcher RJ, Baker JE. Debromination of the flame retardant decabromodiphenyl ether by juvenile carp (*Cyprinus carpio*) following dietary exposure. *Environmental Science & Technology* 2004, 38, (1), 112-119

² Ahn MY, Filley TR, Jafvert CT, Nies L, Hua I, Bezares-Cruz, J. Photodegradation of decabromodiphenyl ether adsorbed onto clay minerals, metal oxides, and sediment. *Environmental Science & Technology* 2006, 40, (1), 215-220

³ Eriksson J, Green, N, Marsh G, Bergman, A. Photochemical decomposition of 15 polybrominated diphenyl ether congeners in methanol/water. *Environmental Science & Technology* 2004, 38, (11), 3119-3125

⁴ Soderstrom, G, Sellstrom U, De Wit CA, Tysklind M. Photolytic debromination of decabromodiphenyl ether (BDE 209). *Environmental Science & Technology* 2004, 38, (1), 127-132

⁵ Soderstrom, G, Sellstrom U, De Wit CA, Tysklind M. Photolytic debromination of decabromodiphenyl ether (BDE 209). *Environmental Science & Technology* 2004, 38, (1), 127-132

⁶ Eriksson J, Green, N, Marsh G, Bergman, A. Photochemical decomposition of 15 polybrominated diphenyl ether congeners in methanol/water. *Environmental Science & Technology* 2004, 38, (11), 3119-3125

⁷ Bezares-Cruz J, Jafvert CT, Hua I. Solar Photodecomposition of Decabromodiphenyl Ether: Products and Quantum Yield. *Environ. Sci. Technol.*, 38 (15), 4149 -4156, 2004

⁸ He JZ, Robrock KR, Alvarez-Cohen L. Microbial reductive debromination of polybrominated diphenyl ethers (PBDEs). *Environmental Science & Technology* 2006, 40, (14), 4429-4434

⁹ Gerecke AC, Hartmann PC, Heeb NV, Kohler HPE, Giger W, Schmid P, Zennegg M, Kohler M. Anaerobic degradation of decabromodiphenyl ether. *Environmental Science & Technology* 2005, 39, (4), 1078-1083

¹⁰ Stapleton H, Dodder N. Photodegradation of Decabromodiphenyl Ether in House Dust by Natural Sunlight. *Environ Sci Technol* 41, Oct, 2007

¹¹ Hites R. Polybrominated Diphenyl Ethers in the Environment and in People: A Meta-Analysis of Concentrations. *Environ. Sci. Technol.* 38 (4): 945-56

¹² Hites, R. op cit.; WWF UK ContamiNATION: National Biomonitoring Survey 2003

<http://www.wwf.org.uk/filelibrary/pdf/biomonitoringresults.pdf>

¹³ Schecter A, Vuk MP, Papke O, Ryan, JJ, Birnbaum L, Rosen, R. Polybrominated diphenyl ethers (PBDEs) in US mothers' milk. *Environmental Health Perspectives* 2003, 111, (14), 1723-1729

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³⁵ SIAM 10, 15-17 March 2000 UK: EU SIDS Initial Assessment Profile

³⁶ Available at http://ec.europa.eu/health/ph_risk/committees/sct/docshtml/sct_out23_en.htm

³⁷ Summary Of The Independent Track A Technical Peer Reviews On Short Chained Chlorinated Paraffins (SCCPs) Dossier Submitted Under The UNECE-LRTAP POPs Protocol, 16/1/08 Available at <http://www.unece.org/env/popsxg/2006/5th%20meeting/Final%20Summary%20Report%20SCCP%20May%201.doc>.