Annex F Questionnaire (one per chemical)

Chemical name (as used by the POPs Review Committee (POPRC))	Commercial Octabromodiphenyl ether (CAS Number 32536-52-0; c OBDE; c-OctaBDE; c-OctaBDPE) "c-OctaBDE" consists of several major isomers **~95% of c-OctaBDE mass is composed of these 7 isomers:** **BDE-183** ~40-45%, **BDE-197** ~20-25%; **BDE-207** & **BDE-196**~10% (each); **BDE-203** ~5%; **BDE-206** ~2%; **BDE-153** ~1% Cf. Additional information attached to the Questionnaire

Explanatory note:

1. This chemical is undergoing a risk management evaluation. It has already satisfied the screening criteria set out in paragraph 4 (a) of Article 8 of the Convention. A risk profile has also been completed for this chemical in accordance with paragraph 6 of Article 8 and with Annex E to the Convention.

Introductory information	
Name of the submitting Party/observer	Bromine Science and Environmental Forum (BSEF) www.bsef.com
Contact details (name, telephone, e-mail) of the submitting Party/observer	Robert Campbell Great Lakes Chemical Corp. A Chemtura Company 1801 Highway 52 NW West Lafayette, IN 47906 E-mail: robert.campbell@chemtura.com Tel. +1765 497 6173 Fax +1765 497 6303 or BSEF Secretariat c/o Burson-Marsteller Brussels Square du Meeûs 37 1000 Brussels – Belgium tel : +32.2.733.93.70 e-mail: mail@bsef.com
Date of submission	5 February 2008

Additional Annex E information	
(i) Production data, including quantity and location	**1994 worldwide production data:** - Estimated 6 000 tonnes/year[1] **Estimated worldwide demand for 1999:** - 3 825 tonnes/year[2]

	Since 2004: - No longer produced in the EU, USA and the Pacific Rim - No information that indicates it is being used or produced in developing countries. **Production sites until 2004:** The Netherlands, France, USA, Japan, UK and Israel The manufacturing process for c-OctaBDE by all BSEF companies resulted in a commercial product that contained diphenyl ether molecules with varying degrees of bromination, but with an organically bound bromine content of approximately 79% by wt. This % bromine corresponds to the theoretical % bromine for a diphenylethers molecule having 8 bromine atoms attached. So while the product was actually a complex reaction product with several different dominant isomers, in commerce this was called "octabromodiphenyl ether"
(ii) Uses	The use of c-OctaBDE had been phased out in the EU, Norway and Switzerland. It is not made or offered for sale by any of the members of BSEF (the largest global manufactures of brominated flame retardants). Because of the lack of availability it is unlikely to be used any longer for the production of flame retarded polymer formulations. Historically about 70 per cent of c-OctaBDE had been used in acrylonitrilebutadiene-styrene (ABS) polymers. Other minor uses included high-impact polystyrene (HIPS), polybutylene terephthalate (PBT) and polyamide polymers. C-OctaBDE was mainly used as flame retardant in ABS type plastics which were used in consumer and commercial electronics and office equipment.
(iii) Releases, such as discharges, losses and emissions	The EU Risk Assessment Report [3] indicates that emissions of c-OctaBDE can occur from Octa-BDE production sites, polymer processing sites, sites formulating or applying flame retardant treatments to textiles, volatile and leaching losses over the service life of polymers or textiles, and also particulate losses over their service life and at disposal. Because production has ceased, emissions from the manufacturing, handling and processing of Octa-BDE can no longer occur. As stated in the Report by the Co-Chair of the Task Force on Persistent Organic Pollutantsto to the 2007 WGSR, "[t]aking account of the ban and phase out of c-OctaBDE, releases during the service life of products and in particular at their disposal, represented the most significant share of the total releases in the UNECE region. Releases after disposal were considered negligible."[4] Consequently as current products reach the end of their service life, proper management of this waste will eliminate service life losses over the coming years.

[1] WHO (1994). Environmental Health Criteria: 162: Brominated Diphenyl Ethers. International Programme on Chemical Safety (IPCS), World Health Organization, Geneva, 1994

[2] Arias, P.A. (2001). Brominated flame retardants - An overview. The Second International Workshop on Brominated Flame Retardants, BFR 2001, May 14-16, Stockholm

[3] For reference please see section (f) "National and international risk evaluations, assessments or profiles and labelling information and hazard classifications, as available"

[4] UN-ECE/EB.AIR/WG.5/2007/14, Working Group on Strategies and Review, Report by the Co-Chair of the Task Force on Persistent Organic Pollutants, pp 6-7)

Explanatory note:

2. This information was requested for preparation of the risk profile in accordance with Annex E of the Convention. The POPRC would like to collect more information on these items. If you have additional or updated information, kindly provide it.

A. Efficacy and efficiency of possible control measures in meeting risk reduction goals (provide summary information and relevant references):	
(i) Describe possible control measures	According to the UN-ECE Report by the Co-Chair of the Task Force on Persistent Organic Pollutants to the 2007 WGSR, a ban of c-OctaBDE would ultimately eliminate emissions from the production, manufacturing and use in new products. It would neither affect the emissions from products already in use nor directly influence emissions from disposal or recovery. Application of BAT/BEP at disposal and recycling/dismantling/reuse could be an efficient and economically reasonable way to minimize related emissions. Related costs were considered economically justifiable.[5] Possible management options were to restrict or eliminate production and use of c-OctaBDE or its PentaBDE and HexaBDE congeners having POP characteristics. Listing the individual congeners could facilitate the monitoring and control of emissions, production and use. This would also be consistent with existing national legislations. All mixtures containing PentaBDE and HexaBDE congeners would then be covered by the obligations of the Protocol, except when they occur as traces.[6]
(ii) Technical feasibility	- C-OctaBDE is no longer made or expected to be used in any of the developed countries, so technical feasibility issues have already been addressed in these countries.
(iii) Costs, including environmental and health costs	Costs implications for consumers are not expected. Financial costs for Governments would depend on the management actions taken. There might be costs associated with mandated control measures e.g. monitoring and enforcement of waste management facilities. There might also be costs associated with monitoring and controlling articles containing c-OctaBDE, especially imported.[7] Also, as stated in the UN-ECE Report by the Co-Chair of the Task Force on Persistent Organic Pollutants, Incremental costs as a result of a complete ban were not expected for the industry in the UNECE region.[8]

[5] UN-ECE/EB.AIR/WG.5/2007/14, Working Group on Strategies and Review, Report by the Co-Chair of the Task Force on Persistent Organic Pollutants, p 7
[6] UN-ECE, pp 7-8
[7] UN-ECE, p 7
[8] UN-ECE, p 7

Explanatory notes:

3. If relevant, provide information on uses for which there may be no suitable alternative or for which the analysis of socio-economic factors justify the inclusion of an exemption when considering listing decisions under the Convention. Detail the negative impacts on society that could result if no exemption were permitted.
4. "Risk reduction goals" could refer to targets or goals to reduce or eliminate releases from intentional production and use, unintentional production, stockpiles, wastes, and to reduce or avoid risks associated with long-range environment transport.
5. Provide the costs and benefits of implementing the control measure, including environmental and health costs and benefits.
6. Where relevant and possible "costs" should be expressed in US dollars per year.

B. Alternatives (products and processes) (provide summary information and relevant references):	
(i) Describe alternatives	The alternative flame retardants for c-OctaBDE have been identified and in general are considered as preferable substitutes to c-OctaBDE. However, some alternatives currently in use caused concern because of their properties. Reactive type flame retardants and halogen free substitutes appeared to be generally preferable under environmental and health aspects.[9]
(ii) Technical feasibility	With the discontinuation of the production and use of c-OctaBDE several years ago, alternatives are already in production and use.
(iii) Costs, including environmental and health costs	-
(iv) Efficacy	-
(v) Risk	-
(vi) Availability	-
(vii) Accessibility	-

[9] UN-ECE/EB.AIR/WG.5/2007/14, p 7

Explanatory notes:

7. Provide a brief description of the alternative product or process and, if appropriate, the sector(s), use(s) or user(s) for which it would be relevant.

8. If several alternatives could be envisaged for the chemical under consideration, including non-chemical alternatives, provide information under this section for each alternative.

9. Specify for each proposed alternative whether it has actually been implemented (and give details), whether it has only reached the trial stage (again, with details) or whether it is just a proposal.

10. The evaluation of the efficacy should include any information on the performance, benefits, costs, and limitations of potential alternatives.

11. Specify if the information provided is connected to the specific needs and circumstances of developing countries.

12. The evaluation of the risk of the alternative should include any information on whether the proposed alternative has been thoroughly tested or evaluated in order to avoid inadvertently increasing risks to human health and the environment. The evaluation should include any information on potential risks associated with untested alternatives and any increased risk over the life-cycle of the alternative, including manufacture, distribution, use, maintenance and disposal.

13. If the alternative has not been tried or tested, information on projected impacts may also be useful.

14. Information or comments on improving the availability and accessibility of alternatives may also be useful.

C. Positive and/or negative impacts on society of implementing possible control measures (provide summary information and relevant references):	
	No occupational exposure since production ceased, nor would

(i) Health, including public, environmental and occupational health	there be any public or environmental exposure arising from manufacturing or process of c-OctaBDE
(ii) Agriculture, including aquaculture and forestry \	-
(iii) Biota (biodiversity)	-
(iv) Economic aspects	-
(v) Movement towards sustainable development	-
(vi) Social costs	Accidental fires are still a significant cause of harm to humans and a source of pollutants that enter the environment. Removal of goods/products that are flame retarded and replacement with goods that have not been made ignition resistant could have an negative effect on society. -

Explanatory notes:

15. Socio-economic considerations could include:

- Any information on the impact (if any), costs and benefits to the local, national and regional economy, including the manufacturing sector and industrial and other users (e.g., capital costs and benefits associated with the transition to the alternatives); and impacts on agriculture and forestry;
- Any information on the impact (if any) on the wider society, associated with the transition to alternatives, including the negative and positive impacts on public, environmental, and occupational health. Consideration should also be given to the positive and negative impacts on the natural environment and biodiversity.
- Information should be provided on how control measures fit within national sustainable development strategies and plans.

D. Waste and disposal implications (in particular, obsolete stocks of pesticides and clean-up of contaminated sites) (provide summary information and relevant references):	
(i) Technical feasibility	-As indicated previously, the EU risk assessment determined that disposal of goods containing c-OctaBDE in a well operated, modern landfill would have a negligible impact on human or environmental exposures. Similarly, the OECD has reported that incineration of these same types of (electronic) goods in a well run, modern incinerator equipped is not expected to cause any major impact on exposures down wind and in the vicinity.
(ii) Costs	-

Explanatory note:

16. Specify if the information provided is connected to the specific needs and circumstances of developing countries

E. Access to information and public education (provide summary information and relevant references):
• The EU risk assessment includes all relevant data. It can be found at: http://ecb.jrc.it/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/REPORT/octareport014.pdf • For access to information about relevant regulatory acts and scientific studies please refer to www.bsef.com

Explanatory note:

17. Please provide details here of access to information and public education with respect to both control measures and alternatives.

F. Status of control and monitoring capacity (provide summary information and relevant references):
All developed countries have in place all monitoring and control capacitites as well as legislative tools to restrict the use of c-OctaBDE.

Explanatory not:

18. With regard to control capacity, the information required is on legislative and institutional frameworks for the chemical under consideration and their enforcement. With regard to monitoring capacity, the information required is on the technical and institutional infrastructure for the environmental monitoring and biomonitoring of the chemical under consideration, not monitoring capacity for alternatives.

G. Any national or regional control actions already taken, including information on alternatives, and other relevant risk management information:

EU:

- Directive 2003/11/EC of the European Parliament and of the Council of 6 February 2003 amending for the 24th time Council Directive 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations (pentabromodiphenyl ether, octabromodiphenyl ether). Official Journal of the European Union, 15.2.2003, L 42, p. 45.

  Available at: http://www.bsef.com/regulation/eu_legislation/index.php

- EU Directives on waste electrical and electronic equipment (WEEE) - The Directive on Waste Electrical and Electronic Equipment (WEEE) aims to increase the recycling and recovery of WEEE through mechanical recycling, feedstock recycling and energy recovery. The Directive will require separation of most of E&E Equipment from unsorted waste in Europe. This E&E waste will then be collected, recycled and re-used under the financial responsibility of manufacturers.

- Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) - The EU Directive to restrict hazardous substances from E&E, bans PBBs, Penta-BDE, and Octa-BDE, from the production of new E&E equipment. The RoHS Directive reflects existing industry practice as well as already implemented European legislation. Indeed, industry voluntarily ceased production of PBBs in 2000. Also, Penta-BDE and Octa-BDE have been banned for use in the European Union since August 2004.

US:

- Penta-BDE and Octa-BDE (and articles containing them) have been prohibited in

California, Hawaii, Illinois, Maryland, Maine, Michigan, New York, Oregon, Rhode Island and Washington.
- Manufacture of Octa-BDE was voluntarily ended on December 31, 2004.

Japan:

- Japanese Chemical Substances Control Law (CSCL)

Canada:

- In 2004, Environment Canada released a draft "Environmental Screening Assessment Report on Polybrominated Diphenyl Ethers (PBDE's)"
- In 2004, Health Canada released a "Screening Assessment Report-Health: Polybrominated Diphenyl Ethers (PBDE's) [Tetra-, Penta-, Hexa-, Hepta-, Octa-, Nona- and Deca- congeners]"

Norway:

In 2002, Norway established a National action plan for brominated flame retardants.

A proposal of June 2007 from the Norwegian Pollution Control Authority (SFT) intended to restrict the use of 18 chemical substances in consumer goods including the flame retardants HBCD and TBBPA when used as an additive. The Norwegian government notified the European Union on its project. This notification opened a three month period for EU Member States and the European Commission to submit their comments on the proposal.

China:

China is currently preparing legislation on waste of electrical and electronic equipment (similar to the European Union WEEE Directive) which is currently been under public consultation by the National Development and Reform Committee. More information available (in Chinese) at http://www.sdpc.gov.cn.

OECD:

In 1995 the major global brominated flame retardant manufacturers through CMA's Brominated Flame Retardant Industry Panel (BFRIP) and CEFIC's European Brominated Flame Retardant Industry panel (EBFRIP) signed the first ever OECD Voluntary Industry Commitment (VIC) within the framework of the OECD's pilot Risk Reduction programme. Included within the scope of the VIC are polybrominated biphenyls (PBBs), polybrominated diphenyl ethers (PBDEs) and tetrabromobisphenol (TBBPA). Further commitment by Japanese producers was incorporated in VIC in 1996.

Under the VIC, the major global brominated flame retardant manufacturers commited not to manufacture non commercial PBDEs congeners as individual flame retardants except when present as part of the commercial Deca-, Octa- and Penta-BDE products. Other commitments included improvement of the purity to 97% or greater of DecaBDE and the minimisation of levels of hexa- and lower brominated diphenyl oxide congeners in commercial Octa-BDE.

Explanatory notes:

19. Actions or measures taken could include prohibitions, phase-outs, restrictions, cleanup of contaminated sites, waste disposal, economic incentives, and other non-legally binding initiatives.

20. Information could include details on whether these control actions have been cost-effective in providing the desired benefits and have had a measurable impact on reducing levels in the environment and contributed to risk reduction.

H. Other relevant information for the risk management evaluation:

Explanatory notes:

21. The above list of items is only indicative. Any other relevant information for the risk management evaluation should also be provided.

I. Other information requested by the POPRC:
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