

Comments and responses on the Guidance for the inventory, identification and substitution of Hexabromocyclododecane (HBCD) (draft, April 2015)

Origin	Issue area	Comment	Response
Canada	Need to avoid duplication with existing guidance (especially ESM of waste and other guidance under Basel).	We have reviewed to ensure (1) the guidance presented is consistent with other documents already issued by the Basel and Stockholm Convention; (2) the information is valuable for the intended audience; (3) the text is clear and unambiguous and supported by existing references. See below for high-level comments, and the changes tracked in the documents attached.	Thank you for your comments and suggested modifications which were considered in the update.
Canada	Reference Convention	More reference to articles of the Convention is needed, as well as consistency with text.	Considered and suggested additions included
Canada	Overarching comment	We are concerned with the level of resources required to review, and the potential for errors caused by, the duplication between these documents and guidance material that already exists under other agreements, particularly as it relates to environmentally sound management of wastes and the availability of existing guidance under Basel. This area might be a good candidate for efficiencies between BRS conventions.	References have been integrated to the respective Basel documents at relevant sections. Also integrated comments from Canada in this respect.
Canada	Consistency with Convention text	Using text that is consistent with the Convention and referencing the specific articles and/or paragraphs where relevant would help the reader comply with the requirements of the Convention. Several suggestions have been proposed accordingly.	The suggested changes in the text have been considered and included.
Canada	Contaminated site versus hot spot	The expression “hot spots” is not used in the Convention. Consider using only the expression “contaminated sites” for consistency with the Convention.	The expression “hot spots” has been substituted. Consider using only the expression “contaminated sites”
Canada		There are overlaps of the information presented and the HBCD technical guidelines that were adopted by Basel in 2015. In light of previous reviews of guidance documents (e.g., BAT/BEP and inventory for BDEs and PFOS) by the Parties and by Basel, and of limited resources to incorporate the resulting comments, we would suggest clarifying where it makes most sense to include the information and present it only once. The other document could then refer to the more authoritative document and support it with	At the position where reference to the Basel Guidelines are suggested, these references were made.

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		relevant examples.	
Canada	Information on substitutes needs to be updated.	Care should be taken to ensure the information on substitutes is current and relevant. For example, we understand Emerald 3000 is already widely used, but Table 9-4 still indicates it is not currently available.	The HBCD alternative part has been moved to the new developed HBCD BAT/BEP guidance
Canada	Comment 1 Overarching:	We suggest that the disclaimers be strengthened to remind the reader that, while reasonable efforts have been made in reviewing the guidance document, in the case of any discrepancy between the information contained in the guidance document and the Stockholm Convention on POPs, the text of the Convention would prevail.	The suggested modification was added to the disclaimer
Canada	Comment 2	Consider adding an “Acknowledgments” section (see Sampling, Screening and Analysis of Persistent Organic Pollutants in Products and Articles for example)	Inventory guidance documents do not contain acknowledgements
Canada	Comment 3	Reference appropriate part of Convention text wherever applicable.	Considered and included
Canada	Comment 4	The Article of the Stockholm Convention in relation to the development of inventories could be better presented and supported with an introduction paragraph.	Considered and included
Canada	Comment 5	Would be more helpful to present the need/value of an inventory consistently with the Guidance for Developing a NIP (which says in section 6.2 that “parties may conduct a preliminary inventory... and then decide which ones need a national inventory”. Suggested wording has been copied from the POP-PBDE inventory	Considered and included
Canada	Comment 6	Adjusted in consideration of the recommended nature of an inventory. Comment	Considered and included
Canada	Comment 7 Referencing to Basel Guidance	The reference is incorrect: The Basel POPs technical guidelines are not document of the Secretariat. Rather, they are UNEP documents approved by the COP. We have provided the correct references and made the changes in the bibliography. This needs to be fixed in all of the document.	This was modified and now referenced as UNEP guidance
Canada	Comment 8	Recommend keeping language as consistent as possible with the Convention, including specific references wherever applicable.	Considered and modified
Canada	Comment 9 referencing to three Basel	We suggest adding a new paragraph to better reflect the fact that other guidance documents are also available and should be used.	The suggested new paragraph was added as suggested and referenced to the Basel guidelines

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	guidelines		
Canada	Comment 10	Adjusted in consideration of the recommended nature of an inventory. Comment	Considered and included
Canada	Comment 11 Import and export of HBCD waste	This information is not available in the Secretariat of the Basel Convention 2014 document. It is also not covered in other section of this document. I suggest to delete it.	In the updated Basel guidance the import and export is considered. Therefore it has been kept and updated with reference to the UNEP 2015 Basel HBCD guidelines
Canada	Comment 12	Adjusted in consideration of the recommended nature of an inventory. Comment	Considered and included
Canada	Comment 13	Recommend keeping language as consistent as possible with the Convention. Considered	Considered and modified
Canada	Comment 14: Paragraph referencing to three Basel guidelines	We suggest removing old data from the text and adding 2015 concentration data supported by the industries (used in the Basel guidelines) to Table 2-2.	Considered and concentrations adopted
Canada	Comment 15: Paragraph referencing to three Basel guidelines	Care should be taken to ensure the information presented is current and relevant. In this case, 2015 data is available in the Basel guidelines (see table 2-2)	Information on concentration from Basel Guideline considered now.
Canada	Comment 16	If this means approximately, it is redundant (it is an estimate)	Considered and modified
Canada	Comment 17 Referencing to Article 6	Recommend keeping language as consistent as possible with the Convention.	Considered and modified
Canada	Comment 18 Exposure worker	This is a vague statement, please specify the activity in which the workers were exposed – was it during manufacturing of HBCD, application of HBCD products? building demolition, etc?	Response: Exposure has been demonstrated e.g. in PS production and from cutting PS foams. This has been added.
Canada	Comment 19 & 21 Keeping language	Recommend keeping language as consistent as possible with the Convention. Considered	Considered and modified

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	Convention consistent		
Canada	Comment 20	Care should be taken to ensure the data is aligned with Basel Convention Guidelines on	The description considers the life cycle in a comprehensive way
Canada	Comment 21 Keeping language Convention consistent	Recommend keeping language as consistent as possible with the Convention. Considered	Considered and modified
Canada	Comment 22 Stakeholder approach	The type of approach to take with stakeholders should be determined by each party.	Suggested modification considered
Canada	Comment 23 Confidential business info	May be helpful to provide examples. These are methods Canada uses to report confidential business information	Suggested modification considered
Canada	Comment 24 Substitute “hot spots”	Recommend keeping language as consistent as possible with the Convention and to substitute “hot spots” by “contaminated sites”.	Substituted in all suggested paragraphs (in one case “hot spot” is appropriate as also acknowledged by Canada)
Canada	Comment 25 Substitute “hot spots”	Recommend keeping language as consistent as possible with the Convention and to substitute “hot spots” by “contaminated sites”.	Substituted in all suggested paragraphs (in one case “hot spot” is appropriate as also acknowledged by Canada)
Canada	Comment 26& 27 Keeping language Convention consistent	Recommend keeping language as consistent as possible with the Convention, with specific references wherever applicable.	Considered and modified
Canada	Comment 28	If this refers to a specific guidance document, the actual title would be helpful.	The title was added
Canada	Comment 29	A public inventory is not a requirement and may be subject to other domestic considerations.	Modification considered and integrated

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Canada	Comment 30	Recommend keeping language as consistent as possible with the Convention and to substitute “hot spots” by “contaminated sites”.	Considered and substituted
Canada	Comment 31	Preferable to include the full title.	Considered and added
Canada	Comment 32	Do you mean HBCD?	Yes - modified
Canada	Comment 33	Recommend keeping language as consistent as possible with the Convention	Considered and modified
Canada	Comment 34	Suggested fix for incomplete sentence.	Considered and modified
Canada	Comment 35	The use of “hot spots” here is appropriate	Kept expression
Canada	Comment 36	This is a best practice and should not be worded as a mandatory requirement.	Considered and modified
Canada	Comment 37	Preferable to cite the full title	Considered and added
Canada	Comments 38 to 46 Chapter on alternatives	Comments on the Chapter on Alternatives	This chapter was been integrated into the BAT/BEP guidance and response to these comments are not addressed here for the updated inventory guidance
Canada	Comments 47	We have added the correct references to the Basel POPs Technical guidelines document.	References considered
Canada	Comment 48 Questionnaire	This questionnaire is not mandatory and should be adapted to suit national circumstances.	Considered: The suggested addition “Sample” was added. Also a footnote that
Canada	Comment 49 Questionnaire	This exemption is not automatic.	Considered and addition integrated
Canada	Comment 50 Questionnaire	Might be preferable to not mention recycling until an acceptable level has been determined.	Meanwhile a low POPs limit is suggested in the Basel guideline and this is referred to now.
Canada	Comment 51 Questionnaire	This questionnaire is not mandatory and should be adapted to suit national circumstances.	Considered: The suggested addition “Sample” was added. Also a footnote that

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Canada	Comment 52 Questionnaire	This exemption is not automatic	Considered and addition integrated
Finland	The document is too prescriptive and detailed, needs to be redrafted accordingly	<p>Thank you for giving us ample time to comment on the very comprehensive Guidance for the inventory, identification and substitution of Hexabromocyclododecane (HBCD), Draft of April, 2015.</p> <p>Our general observation is that while the guidance document contains a huge amount of information, we find it at times too prescriptive and detailed. E.g. we are not convinced that it is useful to specify that the experts can use letter or fax or email to contact stakeholders. The important information in the document seems to disappear in the flood of interesting, but out-of-scope information, and large and small things are not well separated from each other. This might not be related to HBCD guidance only.</p> <p>We think that it would be beneficial to do some redrafting focusing on what the guidance is actually supposed to provide, but just removing text that is not in the scope of the guidance would be an easy start to make it more useful. We have made some proposals in the attached document to illustrate our concerns and are happy to explain those further if necessary.</p>	<p>The individual 9 topic areas raised by Finland were addressed or an explanation has been provided on the approach followed. The details, actions and replies are listed below for the individual areas.</p> <p>Major information which does not belong to the guidance has been removed. Some other information has been moved from the main text to footnotes (see answers to individual points below)</p> <p>By considering the detailed comments of parties and observers, the guidance has been partly redrafted. Two chapters have been entirely removed and where transferred to other guidance (e.g. BAT/BEP).</p>
Finland		<p>1) Our general wish for any guidance is that it would highlight the objectives and questions that need to be answered in the inventory and give information on how those questions could be dealt with. The current document gives a lot of prescriptive guidance (such as how to contact people and who should be invited in the team, especially when the guidance is left in the absence of national information on a very general level (e.g. “include relevant authorities”)), describing processes and schemes instead of defining what is it that needs to be done and how can one figure out who is a stakeholder that needs to be invited. Perhaps it would be possible to structure the document so that the guidance would clearly flag the objectives and questions that need to be answered, give the background information and then, if needed, provide model solutions.</p>	<p>In the step by step approach the stakeholders were named more precisely and not at the general level.</p> <p>The prescriptive guidance has advantages to support non-experienced inventory teams. Finally, countries are free to decide on inventory methodologies and a tiered approach is given in this guidance to offer options for countries at various depths and resource use. The tables for calculation of the inventories are now titled as “samples” to indicate that other approaches can be taken and that this does not mean a prescription to be taken.</p> <p>Finally an article 15 reporting will need to be</p>

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			done where relevant estimated amounts from HBCD in EPS/XPS and possibly textiles should be generated.
Finland		2) We would like to highlight the need to ensure the consistency of this document with the Draft technical guidelines for the environmentally sound management of wastes consisting of, containing or contaminated with hexabromocyclododecane (Draft of 26 November 2014). The waste guidance is a separate document and all overlapping elements should be removed from inventory guidance as appropriate (and also vice-versa). Table 2-3 (“The major HBCD containing wastes are listed in Table 2-3 and Parties could use this as a reference to build a list of their own.”) –is not consistent with the Basel waste guidance. Table 2 in the Basel guidance is according to our understanding the most comprehensive presentation on where/what kind of articles HBCD was used. Very important for the inventories as well as waste management.	<p>The guidance has been amended to ensure consistency with the Basel Convention guidelines. This was also facilitated by the comments submitted by Canada, which highlight the need to ensure consistency with the Basel Guidelines.</p> <p>Table 2 of Basel guidance was added and substituted table 2-2.</p> <p>In respect to wastes, reference is now made to this table 2-2 (Table 2 from Basel guidelines and to the Basel guideline.</p>
Finland	Link to Basel	3) To ensure consistency, the document should perhaps not be giving waste management/ recycling/separation guidance as that is covered in the Basel guidance. E.g. in chapter 6: “In packaging sector, depending on the presence or absence of HBCD in the packaging the EPS/XPS can be further recycled. If some of the packaging in the country contains HBCD then it could be separated before recycling. Technologies for separation could be simple XRF screening (similar to the approach described for WEEE plastic in the POP-PBDE BAT/BEP guidance (Secretariat of the Stockholm Convention 2014)).” is not for this guidance.	The Stockholm Convention covers the entire life cycle of POPs. Therefore also the waste and recycling topic need to be mentioned in the Stockholm Convention inventory guidance. It is however kept to a minimum. The reference to the Basel Guidelines has been improved/optimized and the link to Basel guidelines has been strengthened including inclusion of Table 2.
Finland	Phase in time alternatives	4) A little attention is paid on the phase-in of alternatives in the inventory guidance part. Transition in HIPS and textiles began years ago, but PS foam insulation not until in 2014/2015. This would be helpful for the countries when estimating their HBCD containing materials and should be discussed in the inventory taking part, especially when it comes to extrapolating XRF-bromine contents into HBCD.	Considered and improved in the updated guidance. This was done for EPS/XPS also considering the comments of the HBCD Industry group. The XRF-bromine link and the challenges with other bromine containing EPS/XPS is mentioned, as well as the reference of Schlummer et al. 2015 describing how to overcome this challenge.

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Finland		5) Regarding the chapter 9 on alternatives, it might be worth considering to make it an independent document: Chapter 9 is relevant for the industry using alternatives, rather than the experts developing the inventory.	Also considered: Chapter 9 on alternatives has been taken out of the inventory guidance and moved to the HBCD BAT/BEP guidance which has been recently developed
Finland		<p>6) It would be most important for the process to identify the priorities and whether and where the country actually has HBCD as early in the process as possible. It is not necessary the most efficient way to proceed to invite everybody to the meetings, if the country for instance has no tradition of using EPS for insulation. From our experience this information is available from the industry using HBCD, the downstream users and importers. They should be contacted in the first place to ensure focusing on the right issues. It is important to convey the message that the variation from country to country wrt HBCD use is significant.</p> <p>For instance, the use of HBCD in children’s nightwear is not based on findings on HBCD, but rather on findings that there are fire safety regulations and flame retardants have been found in them. We would assume that it is unlikely that HBCD has been used for that purpose because it was expensive and it was mostly used for back-coated textiles. In addition, alternatives have been phased in and from the old fire-fighting uniforms etc is likely that the FR has already been released into the environment. The inventory teams will need to prioritise and focus on important matters, and the guidance should help them do that.</p> <p>Furthermore, considering the relatively narrow use of HBCD in textile applications, the use of XRF may not be very helpful in in-depth inventory taking (ch. 6.3.3.). We are aware that it is really dangerous to give instructions on what to consider important and what not, but the guidance should give information the country authorities will need to make that judgment themselves.</p>	<p>Additions were made in the steps of inventory development. In step 1 the high priority of HBCD use in EPS/XPS is highlighted now. The response has also stressed that the assessment of HBCD use in EPS/XPS would be the first step.</p> <p>It has not been described in details in what textiles HBCD has been used. Therefore it is useful to look and assess the different applications in the country where flammability standards exist. For promoting the priority assessment the following sentence was added “If and to which extent HBCD has been used in such private clothing has not been documented and might be of lower relevance and only be considered for a Tier III inventory”. Also it is explained now that HBCD in sleep wear is not of relevance.</p> <p>The text for the XRF screening mentions the relevance of HBCD, the likely major use but also that other BFRs including PBDE result in positive results: “According to a first survey, bromine positive tested samples of curtains likely contain HBCD (in Japan 9 out of 10 bromine positive tested curtains contained HBCD as flame retardant) (Kajiwara et al. 2008, 2009). For other applications such as textiles in upholstery in transport considerable</p>

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		<p>Also it would be important to concentrate on those applications with highest volume.</p>	<p><i>amount of PBDEs have been used (Kajiwara et al. 2014). However there might be regional differences in the use of brominated flame retardants. If countries only have XRF as screening tool then the share of bromine positive tested applications might be considered to contain HBCD as a conservative estimate and it should be noted in the inventory report and in NIP report that this might also include textiles containing PBDEs or other brominated flame retardants.”</i></p> <p>In addition to the volume also the exposure and release risk has to be considered. It is explained in the guidance that the largest volume has been used in EPS/XPS. However it is known that the release from textile is considered equal to the releases from PS. Also exposure risk from textiles are likely much higher than that from EPS/XPS. Therefore the advice to concentrate simply on the highest volume is oversimplified and not the right advise considering human exposure risk. Therefore textile applications are relevant and need to be adequately addressed.</p>
Finland		<p>7) We would propose following the same structure as in the HBCD waste guideline to define the HBCD substance flow: 1) HBCD production 2) industry using HBCD (first line users) 3) industry using HBCD containing raw materials (e.g. converters, companies producing EPS articles such as packaging material, insulation boards). This has a major impact on the kind of information they have at their disposal, as well as the material they use and produce.</p>	<p>Better reference is made to the Basel guidelines and Table 2 of the guideline has been included as Table 2-2 with reference</p>
Finland		<p>8) It would be important to maintain the focus in all chapters and remove all unnecessary text. There are many references to risk/exposure, which takes the guidance a bit off focus as in our opinion it is not in the scope of the inventory. To give a few examples:</p>	<p>Considered. More parts were removed considering also the comments from the HBCD industry group and the comments from Canada.</p>

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		<p>1) Chapter 5. <i>“Another study done in an Asian country has shown that expanded polystyrenes buoy, which is abundantly used in aquaculture farms and along the coasts, and the predominant item in beached marine debris, could be a source of HBCD in the marine environment (Hong et al. 2013).”</i></p> <p>It would be more useful for the reader to know how it is recycled and where is the recycle going to.</p> <p>2) 6.1.1. HBCD use in textiles in transport seating and other textile/synthetics use in transport sector <i>“The use of flame retardants in cars have been linked to the levels of PBDEs in human blood serum in a study in the United States (Imm et al. 2009) and also the highest HBCD exposure in United Kingdom via dust were determined to cars (Abdallah & Harrad 2009).”</i> We would propose removing text like this from the document to help the inventory takers to focus in the actual inventory.</p> <p>3) ch 6.1.2 <i>“An assessment of the temperature dependent emission rate of HBCD from a curtain showed measurable releases to air above 80 °C and the human exposure risk was considered small (Miyake et al. 2009).”</i></p> <p>Removing off-the-scope text would make the document less exhaustive.</p>	<p>The information was removed from the main text into a foot note and shortened</p> <p>This information is not yet available. Otherwise it would have been added in the modification. Such information however should evolve from the inventory process.</p> <p>The information is considered of high relevance but has been moved from the main text into a footnote not to disturb the flow.</p> <p>The information has also been removed from the main text with one more sentence into a footnote.</p>
Finland	HBCD in vehicles	9. Please note that vehicles contain HBCD also in other parts than just textiles.	Considered. An additional note has been included to insulation panels in cars/transport can also contain HBCD.
Romania	Analytical part	We propose that the information included in ANNEX A. Sampling HBCD presence and concentration tests be transferred in the Draft guidance on sampling, screening and analysis of persistent organic pollutants in products and articles (2013) and if the case adjusted/complemented.	The analytical part has been moved to the Draft guidance on sampling, screening and analysis of persistent organic pollutants in products and articles (2013) and has been

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			adjusted
Romania	Alternative	<p>Also, in our opinion the information on alternatives, currently included in section 9. Alternatives for HBCD, will be better placed in the upcoming BAT/BEP guidance, which was recommended to be developed by the experts on Best Available Techniques and Best Environmental Practices, at their meeting in Bratislava, Slovakia on 29 September – 1 October 2015 (see meeting report on BRS website http://chm.pops.int/Implementation/BATandBEP/Meetings/ExpertmeetingonBATBEP2015/tabid/4629/mctl/ViewDetails/EventModID/875/EventID/563/xmid/14080/Default.aspx) and/or the online publication “POPs in Articles and Phasing-Out Opportunities (http://poppub.bcrc.cn/). This is due to the fact that substitution of HBCD may be seen as BAT/BEP practice rather than an inventory activity.</p> <p>Therefore, in respect to alternatives the current inventory guidance should only make reference to those sections of the BAT/BEP guidance and/or the online publication where the information on alternatives exists. This will also reduce the length of the guidance. Otherwise we consider the content and length of the guidance appropriate.</p>	The alternative part has been moved to a newly developed BAT/BEP guidance
HBCD Industry Group	Make recommendations more practical and implementable Annex A screening and analysis	<p>Based on the experience of our industry, we have made suggestions that we believe would make the recommendations included in the document more practical and implementable. For example, we have proposed to redraft parts of Annex A, in order to provide information on a cost-effective identification procedure, including on screening and analysis.</p>	The monitoring part has been moved to the screening and monitoring guidance. The modifications and comments were considered in this transfer for the parts which were included in the monitoring guidance.
HBCD Industry Group	PS and other materials	<p>In addition, please note that the comments of the European HBCD Industry Group focus on polystyrene (PS) foams. However, several of our comments are also relevant for other applications, including textiles, and therefore the chapters on other applications should be reviewed in that light.</p>	Most of the suggested corrections were considered. A few suggestions, such as to take out of the publications documenting the presence of HBCD in packaging materials in an Asian study from 2014 were kept and explained in the individual responses below.
HBCD Industry Group	Chapter on Alternatives should be updated.	<p>Finally, we believe that a review of the chapter 9 on alternatives would be appropriate in order to bring it up to date. We also believe that the chapter should focus on information that is relevant for carrying out an inventory on HBCD. We hope you find this information useful during the review of</p>	Chapter 9 on alternatives has been taken out of the inventory guidance and moved to the HBCD BAT/BEP guidance which has been

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		Guidance document.	recently developed.
HBCD Industry Group	Comment A 1	For consistency reasons, we propose to update this to reflect the numbers included in the Basel Technical Guidelines on HBCD.	Considered and integrated as suggested
HBCD Industry Group	Comment A 2	For consistency reasons, we propose to update this to reflect the numbers included in the Basel Technical Guidelines on HBCD..	Considered and integrated as suggested
HBCD Industry Group	Comment A 3	We have included this suggestion here to reflect the text included in the ECHA document which is the basis for this table.	Considered and integrated as suggested
HBCD Industry Group	Comment A 4	We propose to edit the numbers to be consistent with the Basel Technical Guidelines on HBCD	Considered and integrated as suggested
HBCD Industry Group	Comment A5 Consistency Basel	We propose to add this sentence for consistency with the Basel Technical Guidelines on HBCD	Not considered. Due to the effect of surfactants the solubility can be increased in landfills. This information was added to the text with reference.
HBCD Industry Group	Comment A 6	We believe that there are limitations to the material/substance flow analysis approach. As evident from the diagram, this can be a complex approach.	Amendments were made and “excellent” was deleted as suggested. A reference was added to the EEA publication on applicability of MFA/SFA.
HBCD Industry Group	Comment A7 Consistency Basel	We propose to add this sentence for consistency with the Basel Technical Guidelines on HBCD	Not considered. Due to the effect of surfactants the solubility can be increased in landfills. This information was added to the text with reference.
HBCD Industry Group	Comment A 8	We have removed this to avoid repetition as it is also mentioned in the third bullet.	Considered and integrated as suggested
HBCD Industry Group	Comment A 9	We propose to add a reference to official agencies, as they are also mentioned in the paragraph above	Considered and integrated as suggested

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HBCD Industry Group	Comment A 10	We propose to change to ‘potential’ as recycling may continue in some countries if the content of HBCD in waste is below the low POP limit	Considered and integrated as suggested
HBCD Industry Group	Comment A 11	We propose to move this to the box above as it is relevant for all uses	Considered and integrated as suggested
HBCD Industry Group	Comment A 12	We would welcome a definition of what is understood as ‘products’ in this context and what is the difference with articles.	Clarified now by a footnote: Article is an object which during production is given a special shape, surface or design, which determines its function to a greater degree than does its chemical composition. UNEP uses in their “chemical in products” the expression product synonymously for articles.
HBCD Industry Group	Comment A 13 Questionnaire approach	It would be useful to consider developing more than one questionnaires tailored to different target audiences.	As suggested now questionnaires are in plural and the two questionnaires in Annex are titled as “sample questionnaires” with the addition that questionnaires can be adopted considering country needs.
HBCD Industry Group	Comment A 14 Referencing case studies	We propose to remove this as the reference is outdated. The study refers to a time before HBCD was considered for listing under the Stockholm Convention and therefore the data are no longer relevant.	These studies show the former use of HBCD in curtains. Since curtains are used for long time, these studies are not outdated but still relevant since quality curtains have life span of 20 years. For clarification a footnote and reference was added: “The life span of good curtains is more than 20 years (Wrey’s 1997). Therefore HBCD in curtains treated the last decades are to a considerable share still in use.” And it is stressed at another section in the guidance that HBCD has been phased out
HBCD Industry group	CommentA15 Referencing case studies	We propose to remove this as HBCD was not intended to be used in packaging and buoys.	The Rani study shows that HBCD was partly in packaging in Asia in 2014. This included levels from direct use of HBCD even in a fish box and levels indicating that the HBCD stem from recycling. Since HBCD is still produced and also PS boxes from former production might still be used, such studies are still

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			relevant. Also PS containing HBCD might be further recycled illegally despite the restriction. A footnote was added to clarify that HBCD were partly from recycling and partly added as flame retardant.
HBCD Industry group	Comment A16 and A18	Conversion coefficients versus factors	Considered and modified
HBCD Industry group	Comment A17	We propose to remove this as it repeats what is already suggested in the previous paragraph.	Considered and deleted
HBCD Industry group	Comment A19 Potential production region	We propose this edit to reflect that HBCD continues to be produced in certain countries/regions.	Considered and modified
HBCD Industry group	Comment A20	As the POP listing was implemented in Japan in 2014, we do not expect any production to take place in that country.	Considered and deleted
HBCD Industry group	Comment A21	We tried to clarify the sentence. If the revised sentence does not reflect the intended meaning, we would suggest to rephrase it.	Considered and modified
HBCD Industry group	Comment A22	For more information, please refer to ‘The relevance of hexabromocyclododecane for polystyrene EPS/XPS foams to meet fire safety requirements as construction products in Europe’ by Dr J. Troitzsch, 2008.	Noted
HBCD Industry group	Comment A23	This sentence is not very clear, and needs rewriting	Considered and modified
HBCD Industry group	Comment A24	We propose to update this to be in line with the Basel Technical Guidelines on HBCD	Considered and modified
HBCD	Comment A25	Note that in a few years, demolition techniques are likely to have changed in	Considered and modified

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Industry group		some regions	
HBCD Industry group	Comment A26	Please note that this sentence is incomplete	Sentence completed
HBCD Industry group	Comment A27	In the absence of a proper reference source to prove this we propose to delete this sentence.	Sentence was rewritten only indicating the risk
HBCD Industry group	Comment A28 and 29	Note that in practice, the process for using screening methods to identify HBCD is not that simple.	Response: Modification considered and also reference added.
HBCD Industry group	Comment A 30	As this document does not address POP-BDEs, we propose to remove this..	Considered and deleted
HBCD Industry group	Comment A 31	We have edited the text to make it more precise. More information can also be found in the following press release http://www.eumeps.construction/show.php?ID=5001&psid=sokmcvspm19d1e5nk4m4uv1em0	Considered and modified accordingly and added a reference on the technology
HBCD Industry group	Comment A 32	Note that in some regions there will be limited use due to the implementation of the listing	Considered and modified
HBCD Industry group	Comment A 33 and 34; inventory task team	We propose to specify who would be the members of an inventory task team	This depends on the country situation and cannot be determined here. Reference is made to the stakeholder table. Additions are made in this respect
HBCD Industry group	Comment A 35	Note that in some cases, the use of HBCD started in the 1960s. Reference: 'Identification of potentially POP-containing Wastes and Recyclates – Derivation of Limit Values', UBA, 2015	Considered and modified and reference cited
HBCD Industry group	Comment A 36	We propose to change this to 2014, as the listing entered into force in November 2014 and for consistency with similar references in the rest of the document.	Considered and modified

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HBCD Industry group	Comment A 37	The table refers to amount (expressed in tonnes/kg) as opposed to volumes	Considered and modified
HBCD Industry group	Comment A 38 Information to distinguish HBCD and non-HBCD foam and labelling approach	We believe that this would go beyond the remit of the inventory team	Response: Not considered. The information how to distinguish HBCD and non-HBCD containing foam is an important information and is a part of the inventory which need to consider also inventory of future stocks. Therefore it is useful that the inventory team get this information in the countries
HBCD Industry group	Comment A 39	More information may also be found in the press release: http://www.eumeps.construction/show.php?ID=5001&psid=sokmcvspm19d1e5nk4m4uv1em0	Considered and modified and reference added
HBCD Industry group	Comment A 40	As mentioned earlier, we believe that there are limitations to the material/substance flow analysis approach and therefore care should be taken with such an approach.	Amendments were made and reference was added to the EEA publication on applicability of MFA/SFA and to the MFA/SFA recently developed for China. This is option for a Tier III inventory
HBCD Industry group	Comment A 41 and 42	Note that XPS has not been used in packaging and food contact application.	Considered and modified
HBCD Industry group	Comment A 43	We propose to edit the text to make it more practical. Otherwise, the full examination of all the articles to be recycled would be required.	Considered and modified
HBCD Industry group	Comment A 44	We would appreciate an explanation of the 'impact factor'	The concentration in the packaging is explained in the footnote of the table
HBCD Industry group	Comment A 45	We have edited the text to make it more precise. More information can also be found in the following press release http://www.eumeps.construction/show.php?ID=5001&psid=sokmcvspm19d1e5nk4m4uv1em0	Considered and modified accordingly and added a reference on the technology
HBCD Industry	Comment A 46	Such activities only started in October 2015 in Germany. We are not aware of similar activities elsewhere in the world.	Considered and modified

Origin	Issue area	Comment	Response
group			
HBCD Industry group	Comment A 47	This table does not refer to the calculation procedure, but is only listing the HBCD content in EPS and XPS in recycling.	Considered and modified
HBCD Industry group	Comment A 48	Note that screening is only possible for bromine. Further analysis would be needed to determine HBCD. Please refer to Annex A for more information.	With the screening approach developed by Fraunhofer Institute this is also possible for HBCD. Related reference was added.
HBCD Industry group	Comment A 49	Note that other brominated flame retardants may have been used.	Considered and modify
HBCD Industry group	Comment A 50	We have edited the text to reflect the wording included in the listing decision of HBCD	Considered and modify
HBCD Industry group	Comment A 51	This is a repetition of what is said in the previous sentence	Considered and deleted
HBCD Industry group	Comment A 52	This is a strong statement that implies non-compliance by industry, so we propose to delete it.	There are parties which have not yet ratified the amendment. Therefore this is not a proof of non-compliance. The sentence has been modified.
HBCD Industry group	Comment A 53	We would welcome a referencje to confirm this statement and in particular the cutoff point of 3000 ppm.	Since the lowest intended use is 5000 ppm, values considerable lower than this value might indicate recycling. This is not considered a “cut off value” as can be seen from the wording “less than approx. 3000 ppm might indicate”
HBCD Industry group	Comment A 54	Please note that XPS is not used in food packaging	Considered and deleted
HBCD Industry	Comment A 55 and 56	We propose to remove this as it goes beyond the scope of this inventory.	The information is kept but it is modified and clarified that this goes beyond the HBCD inventory

Origin group	Issue area	Comment	Response
HBCD Industry group	Comment A 57	Note that in some cases, the use of HBCD started in the 1960s Reference: 'Identification of potentially POP-containing Wastes and Recyclates – Derivation of Limit Values', UBA, 2015 http://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/texte_35_2015_identification_of_potentially_pop-containing_wastes.pdf	Considered and additional added the reference
HBCD Industry group	Comment A 58	Please note that the comments of the HBCD Industry Group focus on PS foams applications. However, several of our comments made on PS foams are also relevant for other applications, including textiles.	Noted. There are a range of comments from HBCD Industry Group in this chapter which are considered (see below).
HBCD Industry group	Comment A 59	The final text of the Basel Technical Guidelines on HBCD, which is mentioned here as a reference, does not mention that HBCD production volume has increased. Instead it reads: The total production of HBCD was estimated at around 31,000 tonnes in 2011, of which about 13,000 tonnes were produced in EU countries and in the United States, and 18,000 tonnes in China (UNEP/POPS/POPRC.7/19/Add.1, UNEP/POPS/POPRC.8/16/Add.3). For comparison, in 2001 demand for HBCD was 9,500-16,500 tonnes in Europe, 3,900 tonnes in Asia and 2,800 tonnes in North and South America (additional data are available in UNEP/POPS/POPRC.7/19/Add.1 and UNEP/POPS/POPRC.8/16/Add.3). Therefore, we propose to delete this.	Considered and deleted
HBCD Industry group	Comment A 60	We propose to remove this as Deca-BDE is not listed and the listed POP BDEs are not used in textiles.	It is important to link the different POPs inventories where useful. C-PentaBDE has been used in the textile sector which is described in the POP-PBDE inventory guidance. Therefore also currently listed POPs have been used which make this addition necessary. DecaBDE has been recommended to COP for listing at COP8. This information is also appropriate here.
HBCD Industry group	Comment A 61	We propose to delete this as these substances are not listed as POPs.	This information is moved to footnote. decaBDE is recommended for listing in the Convention at COP 8.
HBCD Industry	Comment A 62	Could you please clarify what is the basis for this 200ppm cutoff point?	This is not a cutoff value but the detection limit of the study of Waeger et al which did

Origin	Issue area	Comment	Response
group			not find HBCD in mixed WEEE plastic in European WEEE plastic
HBCD Industry group	Comment A 63	Please note that a 10 to 20 ppm limit will be difficult to accurately address from an analytical point of view (see appendix A)	Agreed and added as information
HBCD Industry group	Comment A 64	This is not relevant in the context of this document. Therefore, we propose to delete it.	Not deleted but modified. It is important to guide the inventory team to do POPs assessments in an integrated manner and that not different inventory teams approach the same stakeholders several time resulting in unwillingness of stakeholders to support due to non-coordinated multiple approaching of inventory teams.
HBCD Industry group	Comment A 66	If this is applied, what methodology would be used to specify standardized background levels?	Background seems below 1 ng/g in different studies/regions.
HBCD Industry group	Comment A 67	Note that background levels would be different in each region.	Considered and added information
HBCD Industry group	Comment A 68	Please note that this sentence is incomplete	Sentence completed
HBCD Industry group	Comment A 69	We propose to remove this as there would be no contamination from EPS and XPS in buildings. HBCD is firmly incorporated in the PS foam matrix. As a result, it does not migrate easily out of the PS foam matrix and therefore exposure to humans and the environment and hence contamination does not occur.	Desborough (2011) found decreasing HBCD levels with increasing distance from building. Note: Industry could contribute with more studies on this subject.
HBCD Industry group	Comment A 70	Please note that HBCD is not used in EPS in furniture	This is a global guidance and needs to consider other regions. For example, furniture used in one region may have been imported from other regions where PS might have been included
HBCD Industry	Comment A 71	It is not clear to us which stakeholder this refers to	Deleted

Origin	Issue area	Comment	Response
group			
HBCD Industry group	Comment A 72	It is not clear to us how oil producing companies could be relevant in this context	Deleted
HBCD Industry group	Comment A 73	Please include a reference for this statement.	References were added
HBCD Industry group	Comment A 74	As mentioned above, HBCD is firmly incorporated in the PS foam matrix. As a result, it does not migrate easily out of the PS foam matrix and therefore exposure to humans and the environment and hence contamination does not occur. Therefore, the recommendations included in this section are not appropriate for HBCD-containing PS foams. We recommend to split the section in two parts: one relating to HBCD production or direct use of the chemical and one for HBCD in polymer matrices.	The contaminated site assessment is suggested for the HBCD life cycle. Therefore it is not useful to split it in two sections. HBCD in polymers can also be released in increased levels in fires and end of life. In a first transect study of a building in UK found decreasing HBCD levels with increasing distance from a house indicating HBCD release impact from the house. Similar findings are made for houses with PCBs sealants.
HBCD Industry Group	Comment 75 References on contaminated sites	Note that these publications refer to the time before HBCD was restricted and may therefore be out of date.	POPs are persistent and are not degrading quickly in the environment. Therefore all studies documenting contamination around sites are relevant and cannot be out of date. Only if at sites remediation projects would have been implemented this need to be updated. We have looked for papers on remediation of HBCD contamination around production sites - which are e.g. available for PCB contaminated sites or PFOS contaminated sites - but have not found remediation projects on HBCD contaminated sites around production sites.
HBCD Industry Group	Comment A76 Contaminated sites from sludge application	Can you please provide a reference?	For production sites and use sites of HBCD investigations on applied sludge have not been done or reported. Detailed HBCD inventories are starting now. However for other POPs production sites the contamination from applied sludge has already been demonstrated.

Origin	Issue area	Comment	Response
			We have added two references in this respect.
HBCD Industry Group	Comment A77	To our knowledge there is no proven direct relationship between HBCD containing EPS and XPS used at specific sites and soil impact.	Response: In a first transec study of a building in UK found decreasing HBCD levels with increasing distance from a house indicating HBCD release impact from the house. Similar findings are made for houses with PCBs sealants.
HBCD Industry Group	Comment A78 Contaminated sites from sludge application	Please note that in specific applications of HBCD many of these elements will not apply	Considered and added “may”
HBCD Industry Group	Comment A79	Please note that this sentence is incomplete	Considered and completed sentence
HBCD Industry Group	Comment A80	As mentioned above, HBCD is firmly incorporated in the PS foam matrix. As a result, it does not migrate easily out of the PS foam matrix and therefore exposure to humans and the environment and hence contamination does not occur. Therefore, the recommendations included in this section are not appropriate for HBCD-containing PS foams. Considering the fact that the majority of HBCD has been used in these applications, the conceptual site model (CSM) should be adjusted to reflect this reality.	A sentence was added in the paragraph stating that releases from foams are relatively low
HBCD Industry Group	Comment A81	The contaminant of concern in this document is only HBCD, therefore this point is not appropriate.	At each investigation other potential contaminants of concern need to be considered. E.g. if a fire was involved that also unintentional POPs are considered. This is now specified.
HBCD Industry Group	Comment A82	Please refer to our previous comment.	In a site investigation all potential POPs pollutants need to be considered. E.g. unintentional POPs if a fire occurred at HBCD EPS/XPS storage etc. Amendment made to clarify this point.
HBCD Industry Group	Comment A83	Please note that it is not clear what this is referring to, as these levels are not specified above	To use data from literature studies. This has now been specified in paragraph 8.1 and is referred to

Origin	Issue area	Comment	Response
HBCD Industry Group	Comment A84	Please refer to our previous comment: If this is applied, what methodology would be used to specify such background levels for HBCD?	Consider the data in literature. Background levels are below 1 ng/kg (actually considerably below 1 ng/kg in most urban sites below 0.1 ng/kg) but since 1 ng/kg is a low concentration this can be used. For some sites at and around industries soil levels were published and are mentioned in chapter 8.
HBCD Industry Group	Comments A84 to A98 Chapter on alternatives	Comments on the Chapter on Alternatives	This chapter has been integrated into the BAT/BEP guidance and response to these comments are not addressed here for the updated inventory guidance
HBCD Industry Group	Comments A99 to A102 Annex on monitoring	Comments on the Annex on Sampling HBCD presence and concentration tests	The monitoring has been integrated into the Screening and monitoring guidance and response to the comments are therefore not addressed here for the updated inventory guidance
HBCD Industry Group	Comment A103 Questionnaire	We propose to also include a reference to buildings to be in line with the text of the HBCD listing	Considered and integrated
HBCD Industry Group	Comment A104 Questionnaire	It is not clear what the asterisk is referring to	Only the packaging which has been treated with HBCD should be considered. This is added now with a footnote.
HBCD Industry Group	Comment A105 Questionnaire	This title is not clear	Title was modified
HBCD Industry Group	Comment A106 to A108 Questionnaire	Please clarify whether the expected answer would be yes/no or the quantity would have to be provided. In the latter case, how would the number be generated?	Response: This is clarified now in a footnote. In case HBCD is detected also the levels would be described possibly in an additional explanatory sheet.
HBCD Industry Group	Comment A109 Questionnaire	We propose to replace the reference with the final Basel Technical Guidelines on HBCD	Replaced with the final Basel Technical Guidelines on HBCD
HBCD	Comment A110 Questionnaire	On which basis has this selection been made? For example, ornaments, decorations and bean bags have not been mentioned in the core text of the	Ornaments and decorations have been added now in the inventory part. Bean bags can be

Origin	Issue area	Comment	Response
Industry Group		inventory document.	considered in the inventory e.g. at production sites.
HBCD Industry Group	Comment A111 Questionnaire	It is not clear to us what this would entail	Removed since packaging is under d)
HBCD Industry Group	Comment A112 Questionnaire	It is not clear to us what this is referring to	Clarified and in a footnote given the option to describe the contaminated site in a separate sheet
HBCD Industry Group	Comment A113 Questionnaire	We propose to clarify how this would be expressed	Clarified that these are contaminations in soils and sediments
HBCD Industry Group	Comment A114 Questionnaire	Please clarify who the respondent would be	The respondent who filled his name and the contact details are from stakeholders (producers, users, recyclers of HBCD and HBCD containing material). Companies and other stakeholders will decide who will respond. Important to have a name and contact to refer back for questions and clarifications
HBCD Industry Group	Comment A115 Questionnaire	Please clarify whose signature would be required	The respondent which name and contact details is on the questionnaire