

Comments on Second Draft of EPEAT SDR Background Doc.

Information Provided:

Revised Background Document (PDF 541K)

[SDR Background Document 070604.pdf](#)

Original Background Document Draft for Comment (PDF 472K)

[SDR Background and Discussion Document 070411.pdf](#)

Comments received on the Original Draft (PDF 770K)

[SDR Background Doc Comments 070502.pdf](#)

List of Registered Commenters (PDF 69K)

[SDR Background Doc Commenter List 070501.pdf](#)

Even though there aren't a large number of comments below we can see that this section was viewed 246 times, indicating wide review by many people.

Comments (246 reads)

Tue, 06/19/2007 - 20:35 — [Sue Chiang](#) New

[Section 1.3 Preliminary Observations Regarding Energy and Enviro](#)

The SDR Background document correctly takes a precautionary approach and states that there is significant ongoing research regarding their [flame retardants] environmental fate and potential impact on human health and the environment, and evaluating alternatives.

Deca-BDE is used widely in computer and audio/video equipment, cell phones, fax machines, televisions, textiles, wire and cables. As a result of this widespread use, great concern exists about its effects on the environment and public health. Deca-BDE has been measured in tissues from humans, and animals. Scientific studies have shown that exposure in rodents just after birth interferes with brain development and the US EPA calls deca-BDE a "probable carcinogen". Other studies have shown that deca-BDE is broken down rapidly into more toxic and persistent forms of PBDEs that are accumulating in the environment, in wildlife and in humans.

1. DecaBDE has been found to accumulate in wildlife:

Deca-BDE has been found in numerous wildlife species, including fish, birds, grizzly bears, and other animals. This finding is significant because it demonstrates that deca-BDE can be absorbed by biological systems. [1]

Deca-BDE can be metabolized by some of these animals to the more toxic lower congeners; carp in particular seem to be able to debrominate deca-BDE to penta-, hexa-, hepta- and octa-BDE. [2 - 4]

2. Deca BDE has been measured in People and Children

The levels of PBDEs in the human population have been rising steadily for the past thirty years and concentrations in breast milk are doubling approximately every five years. [5, 6]

Deca-BDE has been measured in human blood and breast milk. Two recent studies found high levels of PBDEs in the breast milk of American women. This finding was especially alarming because the American women's levels were the highest known in the world. [7, 8] A study done in Washington State found deca-BDE in the breast milk of 60% of the women studied. [9] Deca-BDE also has been found in the cord blood of newborn babies. [10]

Recent exposure models suggest that young children are receiving 300 times greater exposure to PBDEs relative to adults, primarily from breast milk ingestion and ingestion of dust due to hand-mouth behavior. [11, 12]

In the US, 5% of women have concentrations of total PBDEs greater than 300 ng/g lipid weight and levels of some individual congeners (such as the penta-BDE congeners BDE-47 and BDE-99) exceed 100 ng/g lipid weight. [7, 13, 14] Levels that cause adverse neurodevelopmental effects in animal studies are less than 10 times this amount, indicating an uncomfortably small margin of safety for the children of the most highly exposed women. [13]

The rate of exposure to Deca-BDE is alarming in electronics recycling workers. Concentrations as high as 270 ppb have been reported in occupationally exposed individuals working in electronics dismantling and rubber manufacturing facilities. [15]

3. Deca BDE does Breakdown

DecaBDE has been found to breakdown in the environment. Kathleen Schuler of The Institute for Agriculture and Trade Policy cited 21 studies that showed that DecaBDE does degrade when exposed to sunlight. [2, 16 – 23]

Additional studies confirmed that Deca can degrade to more toxic forms in the environment in soil, sediment, house dust and fish tissue. [2, 16-18, 24]

The Clean Production Action (CPA) publication entitled “Deca-BDE: Human Health and Environmental Concerns” refutes the industry's claims that consumer products containing deca-BDE in U.S. homes are an unlikely route of human exposure to PBDEs. CPA cites a Canadian research team “that used measured and modeled concentrations of PBDEs in indoor and outdoor air, soil, dust and food to estimate exposures to total PBDEs and concluded that inadvertent ingestion of house dust is the largest contributor to exposure for both children and adults, except for infants, for whom breast milk is another significant source.” [11]

4. Deca BDE has been found in our homes, cars, workplaces, air, food and consumer products

Deca-BDE has been measured in house dust at concentrations up to 10,000 ppb and can make up to 90% of the total PBDEs in dust. [12]

Deca-BDE has been found in the organic film that develops on the inside of windows, including in car windows. Deca-BDE was also found in the interior automobile dust. PBDEs have also contaminated our foods [33]. A recent study from Spain has shown the first detection of BDE-209 breakdown products in food. [25]

5. Health Concerns regarding BFR's

“Controlled studies in laboratory animals show that some BFR's disrupt thyroid function, causing hyperactivity and problems with learning and memory.” [26]

An IATP publication “Protecting Public health From Toxic Flame Retardants” pointed to the following health concerns:

- Laboratory studies in animals indicate that PBDEs, like PCBs, are toxic to the brain, reproductive system and liver and disrupt thyroid function.

- Deca-BDE has the ability to cause the same effects on developing brains of mice as penta-BDE, which has already been banned in eight states and Europe. [27]
- An estimated 5 percent of American women have levels of PBDEs in their body within 10-fold of those that have been shown to cause reproductive problems in laboratory animals. [28]
- The U.S. Environmental Protection Agency considers Deca a possible human carcinogen. [29]

Sarah Janssen, in a report for Healthcare without Harm entitled “Brominated Flame Retardants: Rising Levels of Concern,” reported that the route for absorption for TBBPA and PBDEs is likely to be through the gastrointestinal tract. It was also noted that PBDEs accumulate in fatty tissues, such as breast milk. Although she noted that none of the BFRs discussed in her report appeared to cause immediate symptoms from acute toxicity at average doses, chronic exposure, especially for infants and wildlife is of greatest concern. This chronic exposure concern is similar to concerns raised around PCBs, particularly for the developing fetus and young child. She also noted that while the research on BFR toxicology is incomplete, the available data did associate BFRs with several health effects in animal studies, including neurobehavioral toxicity, thyroid hormone disruption, reproductive toxicity, immune suppression, and (for some PBDE congeners) possibly cancer. In addition, although she noted that there are data gaps, some evidence exists that shows that BFRs can cause “developmental effects, endocrine disruption, immunotoxicity, reproductive, and long term effects, including second generation effects.” She also noted that, “Some evidence is available for estrogenic activity of PBDEs and TBBPA, but more studies are needed to determine if low-dose exposures have estrogenic activity in humans or other species. [30-32]

“Many electronic companies have found safer substitutes and have phased out the use of deca, including in 95% of computer products and 57% of televisions.” [Institute for Agriculture and Trade Policy-“Protecting Public Health from Toxic Flame Retardants”]

Given the existing available evidence and the substantial potential for health and environmental risks of BFRs, especially Deca BDE, it would be prudent to avoid the use of Deca BDE and to avoid the substitution of other halogenated organic formulations until we have further research.

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Tue, 06/19/2007 - 06:21 — [Sahar Osman-Sypher](#) New

[IPC Comments on June 2007 EPEAT SDR](#)

IPC - Association Connecting Electronics Industries - is the national trade association for the electronic interconnection industry, and represents more than 2,400 member companies involved in the manufacturing and assembly of printed circuit boards. Printed circuit boards and electronic assemblies are the backbone of a variety of electronic devices including computers, cell phones, pacemakers, automobiles, and sophisticated defense systems. On behalf of our members, IPC is pleased to submit the following comments on the Electronic Product Environmental Assessment Tool (EPEAT) Standards Development Roadmap (SDR).

IPC is deeply disturbed that the June 2007 version of the EPEAT SDR continues to contain misleading information and inaccuracies. It appears that our previous comments have not been addressed. Should the EPEAT SDR revision process expect to maintain stakeholder support, it cannot continue to ignore stakeholder concerns raised during the previous and current comment period. Based upon review of the revised SDR, it appears that a number of stakeholder comments were overlooked or ignored. If editors of the SDR are unable to fully consider and incorporate stakeholder comments, a written justification should be provided in the interest of maintaining transparency.

To accurately accomplish its mission, EPEAT criteria must be based on the true lifecycle impacts of the selected products. Criteria based on incomplete and inaccurate data may have the unintended consequence of causing a negative human health or environmental impact.

As mentioned in our previous comments, the SDR Background Document contains many incorrect and unsubstantiated statements regarding Brominated Flame Retardants (BFRs). BFRs are a family of 75 chemical substances with different properties, characteristics, and performance. The only commonality is that all BFRs contain bromine – an element that is available in nature. While environmental and health concerns have been raised about certain BFRs, such as Polybrominated Biphenyls (PBBs) and and Penta- and Octa-Polybrominated Diphenyl Ether (Penta- and Octa-PBDE), industry has responded by removing them from products. Others BFRs, such as Tetrabromobisphenol-A (TBBPA) and Decabrominated Diphenyl Ether (Deca-BDE), have been thoroughly tested and found to have no identified risks or negative impacts on human health or the environment. It is therefore inappropriate and misleading to repeatedly make blanket statements such as, “Also likely to contain brominated flame retardants that may be hazardous to human health.” Additionally, the SDR does not explain why the elimination of this broad category would benefit the environment or human health.

The majority of printed circuit boards manufactured today are built on epoxy resin-fiberglass substrate. Because the very function of printed circuit boards is to transmit electrical charges, a fire retardant is an absolute necessity. TBBPA is the

primary flame retardant used in printed circuit boards. TBBPA is chemically bound into the epoxy resin matrix of circuit boards and therefore will not present an environmental or health hazard because it cannot be released.

TBBPA is currently going through the EU Risk Assessment process. The Human Health section of the Risk Assessment was closed in 2005 with no risks identified. The Scientific Committee on Health & Environmental Risks and a study from the University of Würzburg (under the EU Fire project) also confirmed these conclusions. The Environmental section of the Risk Assessment was closed in March 2007. No risk was identified for TBBPA when used as a reactive, such as in the epoxy resins of printed circuit boards. Therefore, it is entirely incorrect to make the statement in Section 1.3, “Nearly all products use some flame retardants that have been identified as constituents of concern-including TBBPA (reacted into circuit boards)...”

As mentioned in our previous comments, the SDR Background Document also repeatedly classifies Deca-BDE as a “constituent of concern.” DecaBDE, one of the flame retardant chemicals used in a variety of electronic applications, has been the subject of extensive scientific reviews by the National Academy of Sciences, the Consumer Product Safety Commission and a 10-year risk assessment by the European Union. None of the findings from this work supports restrictions or prohibitions on the use of Deca-BDE in these applications. Based on the EU Risk Assessment, an ongoing process under which Deca-BDE is subject to regular review by the EU, Deca-BDE has been exempted from regulation under the EU RoHS (Restriction of Hazardous Substances) Directive.

While non-halogenated alternative fire retardant material systems are being developed and introduced into products, it is important to note that the reliability of many alternative flame retardants has not been fully qualified at the assembly level. There is also no data indicating that any of the materials currently being considered as replacements for these halogenated flame retardants are any better or worse for the environment or human health. Significant research is needed before BFR substitution can occur on a broad basis. In addition to assessments of the flame retardant systems’ effects on product functionality and reliability, it is necessary to evaluate the lifecycle impacts (design, use, and end-of-life) of the substitutes, as compared to the BFRs currently in use. Any alternatives considered should have been subjected to an equivalent battery of testing for human health and environmental effects as the substance they are meant to replace, and been found to have a more favorable toxicity profile.

As mentioned in our previous comments, IPC requests removal of all references to Deca-BDE and TBBPA as “environmental or human health concerns” for the reasons stated above. Requiring the replacement of these products with other flame retardants whose potential impacts on human health and the environment are far less understood is not sound policy. In fact, elimination of all BFRs could have a significant negative impact on human health. BFRs are added to plastics used in electrical and electronic equipment (EEE) to slow down or prevent the ignition of fire. Flame retardants, when used in EEE, save lives and reduce property damage by preventing the spread of flame and fire. Fire statistics suggest that the risk of death or injury from fires involving consumer products can be reduced 30 to 90 percent or more by using flame retardants.

Public safety is a paramount concern for electronics manufacturers. The use of flame retardants in electronic equipment is paramount to the fire safety of these products and their use should not be discouraged. Until relevant and scientifically validated data are presented proving that the TBBPA and Deca-BDE have an adverse human health or environmental impact and the alternatives are better, all reference to these substances should be withdrawn from use as an EPEAT environmental criterion. If the editors remain unable to address all stakeholder comments, a written explanation for the decision should be provided to all stakeholders.

For more information, please contact Fern Abrams, Director of Environmental Policy, at fabrams@ipc.org or 703-522-0225.

Tue, 06/19/2007 - 05:57 — [Susan Landry](#) New

[Important Environmental Criteria missing](#)

I would like to point out that brominated flame retardants are managed under a comprehensive product stewardship program – VECAPTM. Minimizing potential emissions of flame retardants, or anything for that matter, is an important environmental criteria is missing from the roadmap.

The bromine industry recognizes the importance of minimizing potential emissions of chemicals to the environment. As such, the major producers of brominated flame retardants are committed to making their manufacturing facilities compliant with the industry's Voluntary Emissions Control Action Program (VECAPTM), and to expand the program to their downstream users in North America. Under VECAPTM, the manufacturers and users of brominated flame retardants are working together to establish and implement best practices for reducing and preventing emissions of these products to the environment.

Tue, 06/19/2007 - 05:35 — [Susan Landry](#) New

Section 1.3 Preliminary Observations Regarding Energy and Env

Environmental and Human Health Profiles of Brominated Flame Retardants

It is highly misleading to refer to BFRs generically. Due to the differences in these various materials, the only broad claim that can be made about this family of chemicals is that they all contain bromine. There are many different brominated flame retardants, each with a different chemical structure and properties. Of the brominated flame retardants specifically referenced in the Roadmap:

Deca-BDE

Deca-BDE is the most studied flame retardant available and has repeatedly been found safe for continued use by bodies such as the U.S. Consumer Products Safety Commission (2006) , U.S. Consumer Products Safety Commission (2001) , European Union (10-year Risk Assessment – completed in 2004; new data reviewed on an ongoing basis) , US EPA's Voluntary Children's Chemical Evaluation Panel (ongoing), U.S. National Academy of Sciences (2000), Chemical Evaluation & Research Institute, Japan (2005) and others. Based on the conclusions of the EU Risk Assessment, Deca-BDE was exempted from regulation under the EU RoHS Directive.

TBBPA and HBCD

TBBPA and HBCD are both currently going through the EU Risk Assessment process.

The Human Health section of the TBBPA Risk Assessment has been closed with no risks identified. The Scientific Committee on Health & Environmental Risks and a study from the University of Wurzburg (under the EU Fire project) also confirmed these conclusions. The Environmental section of the Risk Assessment was closed in March 2007. No risk was identified for TBBPA when used as a reactive, such as in the epoxy resins of printed circuit boards. Technical experts confirmed a risk for sediment and water when TBBPA is added to ABS plastics. These risks are manageable through the Voluntary Emissions Control Action Program (VECAP). Under this program, TBBPA additive customers in Europe (89% by volume) have already started reducing their emissions. This program also encompasses Deca-BDE and HBCD.

Others

In cases where particular flame retardants have been prohibited, that should be noted and referenced. For electronics, PBBs, Penta-BDE and Octa-BDE have been prohibited in the European Union and are regulated under the RoHS Directive. Penta- and Octa-BDE have also been prohibited in several states.

Tue, 06/19/2007 - 05:31 — [Susan Landry](#) New

EPEAT 6.18 Proposed Comments, Albemarle Corporation

This version of the EPEAT Standards Development Roadmap continues to inappropriately identify elimination of brominated flame retardants as an "opportunity for environmental benefits" and to assert that all brominated flame retardants pose potential human health concerns.

Prior to EPEAT recommending deselecting any substances, there should be a criteria developed by which materials should be judged. The current Roadmap provides no discussion of how criteria for "opportunity for environmental benefits" were determined, or why brominated flame retardants are singled out for consideration. Additionally, there is no discussion of how inclusion of this broad category would benefit the environment or human health.

[BSEF Comments on June 2007 EPEAT SDR](#)

The June 2007 version of the EPEAT Standards Development Roadmap continues to inappropriately identify elimination of brominated flame retardants as an “opportunity for environmental benefits” and to assert that all brominated flame retardants pose potential human health concerns. Before EPEAT recommends deselecting any substances, there should be a criteria developed by which materials should be judged. The current Roadmap provides no discussion of how criteria for “opportunity for environmental benefits” were determined, or why brominated flame retardants are singled out for consideration. Additionally, there is no discussion of how inclusion of this broad category would benefit the environment or human health.

Section 1.3 Preliminary Observations Regarding Energy and Environmental Considerations

Environmental and Human Health Profiles of Brominated Flame Retardants

It is highly misleading to refer to BFRs generically. Due to the differences in these various materials, the only broad claim that can be made about this family of chemicals is that they all contain bromine. There are many different brominated flame retardants, each with a different chemical structure and properties. Of the brominated flame retardants specifically referenced in the Roadmap:

Deca-BDE

Deca-BDE is the most studied flame retardant available and has repeatedly been found safe for continued use by bodies such as the U.S. Consumer Products Safety Commission (2006) (1), U.S. Consumer Products Safety Commission (2001) (2), European Union (10-year Risk Assessment – completed in 2004; new data reviewed on an ongoing basis) (3), US EPA’s Voluntary Children’s Chemical Evaluation Panel (4) (ongoing), U.S. National Academy of Sciences (5) (2000), Chemical Evaluation & Research Institute, Japan (6) (2005) and others. Based on the conclusions of the EU Risk Assessment, Deca-BDE was exempted from regulation under the EU RoHS Directive.

TBBPA and HBCD

TBBPA and HBCD are both currently going through the EU Risk Assessment process.

The Human Health section of the TBBPA Risk Assessment has been closed with no risks identified. The Scientific Committee on Health & Environmental Risks and a study from the University of Wurzburg (under the EU Fire project) also confirmed these conclusions. The Environmental section of the Risk Assessment was closed in March 2007. No risk was identified for TBBPA when used as a reactive, such as in the epoxy resins of printed circuit boards. Technical experts confirmed a low risk for sediment and water when TBBPA is added to ABS plastics. These risks are manageable through the Voluntary Emissions Control Action Program (VECAP). Under this program, TBBPA additive customers in Europe (89% by volume) have already started reducing their emissions. This program also encompasses Deca-BDE and HBCD.

Others

In cases where particular flame retardants have been prohibited, that should be noted and referenced. For electronics, PBBs, Penta-BDE and Octa-BDE have been prohibited in the European Union and are regulated under the RoHS Directive. Penta- and Octa-BDE have also been prohibited in several states.

Brominated flame retardants are managed under a comprehensive product stewardship program – VECAP TM

The bromine industry recognizes the importance of minimizing potential emissions of chemicals to the environment. As such, the major producers of brominated flame retardants are committed to making their manufacturing facilities compliant with the industry’s Voluntary Emissions Control Action Program (VECAP TM), and to expand the program to their downstream users in North America. Under VECAP TM, the manufacturers and users of brominated flame retardants are working together to establish and implement best practices for reducing and preventing emissions of these products to the environment.

Use of Brominated Flame Retardants and Alternatives

The decision by some television manufacturers to use alternative flame retardants appears to be driven by market pressures, and is not supported by scientific evidence related to the use of Deca. For those using alternatives, such use is typically in specific models at the higher end of the cost range.

It should be noted that the use of flame retardants in televisions in the US is voluntary – there are no federal or state fire safety standards for most consumer electronics, despite the fact that electronics generally contain significant heat sources and are made of highly flammable plastics. Deca-BDE has become the flame retardant of choice in certain electronics applications because it is easy to use, highly effective and cost efficient. As such, eliminating Deca-BDE and forcing the use of products that are harder to use, less effective in same thickness plastics and more costly could very likely lead to the removal of flame retardants altogether. As we have seen in Europe, (7) this can lead to more fires and unnecessary injuries and deaths.

Additionally, principles of sound chemical regulation suggest that, in order to be considered “safer,” an alternative should have been subjected to an equivalent battery of testing for human health and environmental effects as the substance they are meant to replace, and been found to have a more favorable toxicity profile. In fact, no other flame retardant has been as exhaustively evaluated as Deca-BDE, from initial production through recycling at the end of consumer product life, and been found safe for continued use.

In its areas of application, Deca-BDE is the most effective flame retardant available. There are no potential alternatives that combine Deca-BDE's technical efficiency with such rigorous evaluation of potential environmental and human health impacts. Requiring the replacement of Deca-BDE, a product with no identified risks to human health or the environment, with other flame retardants whose potential impacts on human health and the environment are far less understood is not sound policy.

TBBPA continues to be used in 95% of all FR-4 printed wiring boards.

Section 2.2 Mobile Devices Environmental Profile

The plastic cases of cell phones do not contain any flame retardants according to our best information. TBBPA in printed wiring boards is fully reacted and therefore no longer present as a distinct substance.

Regardless, neither TBBPA nor Deca-BDE pose a threat to the environment (8) or human health (3,9) in these applications and should not be included as a consideration in this section.

Section 3.2 Printers Environmental Profile

Neither TBBPA nor Deca-BDE pose a threat to the environment or human health (3,8) and should not be included as a consideration in this section.

The use of Deca-BDE in the computer industry is very limited and the decision by some manufacturers to use alternative flame retardants appears to be driven by market considerations, not by science-based concerns with the use of Deca.

Any alternatives considered should have been subjected to an equivalent battery of testing for human health and environmental effects as the substance they are meant to replace, and been found to have a more favorable toxicity profile. In fact, no other flame retardant has been as exhaustively evaluated as Deca-BDE, from initial production through recycling at the end of consumer product life, and been found safe for continued use. The use of less-tested substances should not be encouraged by proposing to deselect BFRs for institutional purchasing via the EPEAT process.

Section 4.2 Copiers Environmental Profile

Neither TBBPA nor Deca-BDE pose a threat to the environment or human health (3,8) and should not be included as a consideration in this section.

The use of Deca-BDE in the computer industry is very limited and the decision by some manufacturers to use alternative flame retardants appears to be driven by market considerations, not by science-based concerns with the use of Deca.

Any alternatives considered should have been subjected to an equivalent battery of testing for human health and environmental effects as the substance they are meant to replace, and been found to have a more favorable toxicity profile. In fact, no other flame retardant has been as exhaustively evaluated as Deca-BDE, from initial production through recycling at

the end of consumer product life, and been found safe for continued use. The use of less-tested substances should not be encouraged by proposing to deselect BFRs for institutional purchasing via the EPEAT process.

Section 6.2 Servers Environmental Profile

BFRs should be removed as an environmental criterion. It is highly misleading to refer to BFRs generically. Due to the differences in these various materials, the only broad claim that can be made about this family of chemicals is that they all contain bromine. There are many different brominated flame retardants, each with a different chemical structure and properties.

Inclusion of BFRs will set disturbing precedent by blacklisting an entire class of chemicals – all brominated flame retardants – based on speculation that all chemicals in a given class have similar effects on human health and the environment. Scientific analysis of individual chemicals proves that this theory is wrong.

Section 7.2 Televisions and Television Monitors Environmental Profile

The decision by some television manufacturers to use alternative flame retardants appears to be driven by market pressures, and not by scientific concerns with the use of Deca-BDE. For those using alternatives, such use is typically in specific models at the higher end of the cost range.

As noted above, the use of flame retardants in televisions in the U.S. is voluntary – there are not federal or state fire safety standards for most consumer electronics, despite the fact that the electronics generally contain significant heat sources and are made from highly flammable plastics. Deca-BDE has become the flame retardant of choice in certain electronics applications because it is easy to use, highly effective and cost efficient. Eliminating Deca-BDE and forcing the use of products that are harder to use, less effective in the same thickness plastics and more costly could lead to the removal of flame retardants altogether. As we have seen in Europe (7), this can lead to more fires and unnecessary injuries and deaths.

References:

- (1) U.S. Consumer Product Safety Commission, Quantitative Assessment of Potential Health Effects from the Use of Fire Retardant (FR) Chemicals in Mattresses, January 2006 (<http://www.cpsc.gov/library/foia/foia06/brief/matttabd.pdf>)
- (2) U.S. Consumer Product Safety Commission, CPSC Staff Exposure and Risk Assessment of Flame Retardant Chemicals in Residential Upholstered Furniture, April 2001 ((<http://www.cpsc.gov/library/foia/foia02/brief/briefing.html>) pages 658 through 765 of 922 pages in Small Open Flame Ignition of Upholstered Furniture (4014), Options to Address Small Open Flame Ignition of Upholstered Furniture; October 30, 2001, Over 900 pages (PARTS 10, 11, and 12).)
- (3) European Union Risk Assessment Report: Bis(pentabromophenyl ether). 1st Priority List, Volume 17. European Commission Joint Research Centre, EUR 20402 EN, 2002. European Union Risk Assessment Report: Bis(pentabromophenyl ether). 1st Priority List, Volume 17. European Commission Joint Research Centre, EUR 20402 EN, 2002. (http://ecb.jrc.it/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/REPORT/de...)
- (4) Voluntary Children's Chemical Evaluation Program, Status, Decabromodiphenyl ether, CAS No. 1163-19-5 (<http://www.epa.gov/oppt/chemrtk/vccep/pubs/chem21.htm>)
- (5) U.S. National Academy of Sciences, National Research Council, Toxicological Risks of Selected Flame-Retardant Chemicals, 2000 (<http://www.nap.edu/>)
- (6) Japan New Energy and Industrial Technology Development Organization, Initial Risk Assessment Report of Chemical Substances, 2005
- (7) LCA Study of Flame Retardants in TV Enclosures, Presented to Flame Retardants 2000 Conference, Margaret Simonson, SP, P.O. Box 857, S-501, 15 Bo?ra?s, Sweden and Ha?kan Stripple, SP P.O. Box 47086, S-402 58, Gothenberg, Sweden, February 2000.

(8) John D. Lincoln, Oladele A. Ogunseitan, Andrew A. Shapiro & Jean-Daniel M. Saphores: Leaching Assessments of Hazardous Materials in Cellular Telephones; Environ. Sci. Technol., 41(7), 2572-2578, 2007. ACS Publications.

(9) European Union Risk Assessment Report: 2,2',6,6'-tetrabromo-4,4'-isopropylidene diphenol (tetrabromobisphenol-A or TBBP-A). 4 th Priority List, Part II – human health Volume 64. European Commission Joint Research Centre, EUR 22161 EN, 2006. http://ecb.jrc.it/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/REPORT/te...

Mon, 06/18/2007 - 08:37 — [Rene Montaigne](#) New

[EBFRIP Comments on the Draft EPEAT SDR of 6/4/07](#)

EBFRIP, the European Brominated Flame Retardant Industry Panel, a Cefic (The European Chemical Industry Council) Sector Group, assembles the main manufacturers of brominated flame retardants on the European market. These are Albemarle, Chemtura and Eurobrom, representing ICL-IP. EBFRIP, respectfully, submits the following comments on the June 4, 2007 Draft EPEAT SDR: The June 2007 version of the EPEAT Standards Development Roadmap inappropriately identifies elimination of brominated flame retardants as an “opportunity for environmental benefits” and asserts that all brominated flame retardants pose potential human health concerns. Before EPEAT recommends deselecting any substances, there should be a criteria developed by which materials should be judged. The current Roadmap provides no discussion of how criteria for “opportunity for environmental benefits” were determined, or why brominated flame retardants are singled out for consideration. Additionally, there is no discussion of how inclusion of this broad category would benefit the environment or human health.

Section 1.3 Preliminary Observations Regarding Energy and Environmental Considerations

Environmental and Human Health Profiles of Brominated Flame Retardants

It is highly misleading to refer to BFRs generically. Due to the differences in these various materials, the only broad claim that can be made about this family of chemicals is that they all contain bromine. There are many different brominated flame retardants, each with a different chemical structure and properties. Of the brominated flame retardants specifically referenced in the Roadmap:

Deca-BDE

Deca-BDE is the most studied flame retardant available and has repeatedly been found safe for continued use by bodies such as the U.S. Consumer Products Safety Commission (2006) 1, U.S. Consumer Products Safety Commission (2001) 2, European Union (10-year Risk Assessment – completed in 2004; new data reviewed on an ongoing basis) 3, US EPA’s Voluntary Children’s Chemical Evaluation Panel⁴ (ongoing), U.S. National Academy of Sciences 5 (2000), Chemical Evaluation & Research Institute, Japan⁶ (2005) and others. Based on the conclusions of the EU Risk Assessment, Deca-BDE was exempted from regulation under the EU RoHS Directive.

TBBPA and HBCD

TBBPA and HBCD are both currently going through the EU Risk Assessment process.

The Human Health section of the TBBPA Risk Assessment has been closed with no risks identified. The Scientific Committee on Health & Environmental Risks and a study from the University of Wurzburg (under the EU Fire project) also confirmed these conclusions. The Environmental section of the Risk Assessment was closed in March 2007. No risk was identified for TBBPA when used as a reactive, such as in the epoxy resins of printed circuit boards. Technical experts confirmed a low risk for sediment and water when TBBPA is added to ABS plastics. These risks are manageable through the Voluntary Emissions Control Action Program (VECAP). Under this program, TBBPA additive customers in Europe (89% by volume) have already started reducing their emissions. This program also encompasses Deca-BDE and HBCD.

Others

In cases where particular flame retardants have been prohibited, that should be noted and referenced. For electronics, PBBs, Penta-BDE and Octa-BDE have been prohibited in the European Union and are regulated under the RoHS Directive. Penta- and Octa-BDE have also been prohibited in several states.

Brominated flame retardants are managed under a comprehensive product stewardship program – VECAP TM

The bromine industry recognizes the importance of minimizing potential emissions of chemicals to the environment. As such, the major producers of brominated flame retardants are committed to making their manufacturing facilities compliant with the industry's Voluntary Emissions Control Action Program (VECAP TM), and to expand the program to their downstream users in North America. Under VECAP TM, the manufacturers and users of brominated flame retardants are working together to establish and implement best practices for reducing and preventing emissions of these products to the environment. Attached please find the second annual report recently published on the progress of VECAP.

http://zerowaste.org/epeat_collab/files/VECAP_APR_2007_Final.pdf

Use of Brominated Flame Retardants and Alternatives

The decision by some television manufacturers to use alternative flame retardants appears to be driven by market pressures, and is not supported by scientific evidence related to the use of Deca. For those using alternatives, such use is typically in specific models at the higher end of the cost range.

It should be noted that the use of flame retardants in televisions in the US is voluntary – there are no federal or state fire safety standards for most consumer electronics, despite the fact that electronics generally contain significant heat sources and are made of highly flammable plastics. Deca-BDE has become the flame retardant of choice in certain electronics applications because it is easy to use, highly effective and cost efficient. As such, eliminating Deca-BDE and forcing the use of products that are harder to use, less effective in same thickness plastics and more costly could very likely lead to the removal of flame retardants altogether. As we have seen in Europe, ⁷ this can lead to more fires and unnecessary injuries and deaths.

Additionally, principles of sound chemical regulation suggest that, in order to be considered “safer,” an alternative should have been subjected to an equivalent battery of testing for human health and environmental effects as the substance they are meant to replace, and been found to have a more favorable toxicity profile. In fact, no other flame retardant has been as exhaustively evaluated as Deca-BDE, from initial production through recycling at the end of consumer product life, and been found safe for continued use.

In its areas of application, Deca-BDE is the most effective flame retardant available. There are no potential alternatives that combine Deca-BDE's technical efficiency with such rigorous evaluation of potential environmental and human health impacts. Requiring the replacement of Deca-BDE, a product with no identified risks to human health or the environment, with other flame retardants whose potential impacts on human health and the environment are far less understood is not sound policy.

TBBPA continues to be used in 95% of all FR-4 printed wiring boards.

Section 2.2 Mobile Devices Environmental Profile

The plastic cases of cell phones do not contain any flame retardants according to our best information. TBBPA in printed wiring boards is fully reacted and therefore no longer present as a distinct substance.

Regardless, neither TBBPA nor Deca-BDE pose a threat to the environment ⁸ or human health^{3,9} in these applications and should not be included as a consideration in this section.

Section 3.2 Printers Environmental Profile & section 4.2 Copiers Environmental Profile

Neither TBBPA nor Deca-BDE pose a threat to the environment or human health ^{3,8} and should not be included as a consideration in this section.

The use of Deca-BDE in the computer industry is very limited and the decision by some manufacturers to use alternative flame retardants appears to be driven by market considerations, not by science-based concerns with the use of Deca.

Any alternatives considered should have been subjected to an equivalent battery of testing for human health and environmental effects as the substance they are meant to replace, and been found to have a more favorable toxicity profile. In fact, no other flame retardant has been as exhaustively evaluated as Deca-BDE, from initial production through recycling at the end of consumer product life, and been found safe for continued use. The use of lesstested substances should not be

encouraged by proposing to deselect BFRs for institutional purchasing via the EPEAT process. Furthermore the major BFRs are being strictly managed through the VECAP program.

Section 6.2 Servers Environmental Profile

BFRs should be removed as an environmental criterion. It is highly misleading to refer to BFRs generically. Due to the differences in these various materials, the only broad claim that can be made about this family of chemicals is that they all contain bromine. There are many different brominated flame retardants, each with a different chemical structure and properties.

Inclusion of BFRs will set disturbing precedent by blacklisting an entire class of chemicals – all brominated flame retardants – based on speculation that all chemicals in a given class have similar effects on human health and the environment. Scientific analysis of individual chemicals proves that this theory is wrong.

Section 7.2 Televisions and Television Monitors Environmental Profile

The decision by some television manufacturers to use alternative flame retardants appears to be driven by market pressures, and not by scientific concerns with the use of Deca-BDE. For those using alternatives, such use is typically in specific models at the higher end of the cost range.

As noted above, the use of flame retardants in televisions in the U.S. is voluntary – there are not federal or state fire safety standards for most consumer electronics, despite the fact that the electronics generally contain significant heat sources and are made from highly flammable plastics. Deca-BDE has become the flame retardant of choice in certain electronics applications because it is easy to use, highly effective and cost efficient. Eliminating Deca-BDE and forcing the use of products that are harder to use, less effective in the same thickness plastics and more costly could lead to the removal of flame retardants altogether. As we have seen in Europe 7, this can lead to more fires and unnecessary injuries and deaths.

References:

1 U.S. Consumer Product Safety Commission, Quantitative Assessment of Potential Health Effects from the Use of Fire Retardant (FR) Chemicals in Mattresses, January 2006 (<http://www.cpsc.gov/library/foia/foia06/brief/matttabd.pdf>)

2 U.S. Consumer Product Safety Commission, CPSC Staff Exposure and Risk Assessment of Flame Retardant Chemicals in Residential Upholstered Furniture, April 2001 (<http://www.cpsc.gov/library/foia/foia02/brief/briefing.html>, pages 658 through 765 of 922 pages in Small Open Flame Ignition of Upholstered Furniture (4014), Options to Address Small Open Flame Ignition of Upholstered Furniture; October 30, 2001, Over 900 pages (PARTS 10, 11, and 12).)

3 European Union Risk Assessment Report: Bis(pentabromophenyl ether). 1st Priority List, Volume 17. European Commission Joint Research Centre, EUR 20402 EN, 2002.
http://ecb.jrc.it/DOCUMENTS/ExistingChemicals/RISK_ASSESSMENT/REPORT/dec...

4 Voluntary Children's Chemical Evaluation Program, Status, Decabromodiphenyl ether, CAS No. 1163-19-5 (<http://www.epa.gov/oppt/chemrtk/vccep/pubs/chem21.htm>)

5 U.S. National Academy of Sciences, National Research Council, Toxicological Risks of Selected Flame-Retardant Chemicals, 2000 (<http://www.nap.edu/>)

6 Japan New Energy and Industrial Technology Development Organization, Initial Risk Assessment Report of Chemical Substances, 2005

7 LCA Study of Flame Retardants in TV Enclosures, Presented to Flame Retardants 2000 Conference, Margaret Simonson, SP, P.O. Box 857, S-501, 15 Bo?ra?s, Sweden and Ha?kan Stripple, SP P.O. Box 47086, S-402 58, Gothenberg, Sweden, February 2000.

8 John D. Lincoln, Oladele A. Ogunseitan, Andrew A. Shapiro & Jean-Daniel M. Saphores: Leaching Assessments of Hazardous Materials in Cellular Telephones; Environ. Sci. Technol., 41(7), 2572-2578, 2007. ACS Publications.

9 European Union Risk Assessment Report: 2,2',6,6'-tetrabromo-4,4'-isopropylidene diphenol (tetrabromobisphenol-A or TBBP-A). 4 th Priority List, Part II – human health Volume 64. European Commission Joint Research Centre, EUR 22161 EN, 2006. http://ecb.jrc.it/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/REPORT/te...

Mon, 06/18/2007 - 01:31 — [Pierre Georlette](#) New

[Page 3: Preliminary Observations](#)

About the elimination of Deca-BDE and or BFRs by numerous manufacturers, it would be important and valuable to mention that the only reason behind this action is the unbearable pressure exerted by NGOs such as Greenpeace who are using the media to spread unfounded and frightening rumours to discredit the manufacturers if they don't follow their dictate (Ref. 1, 2 and 3).

Ref. 1: <http://www.roughlydrafted.com/RD/Home/ABC6DFDA-9DE9-4EA8-A269-65EAAB6286...>

Ref. 2: <http://www.roughlydrafted.com/RD/Home/29C5599A-FCD8-4E30-9AD5-5497999ABA...>

Ref. 3: Dr. Patrick Moore, National Post, October 25th 2006: "Lessons learned from exploding laptops"

Mon, 06/18/2007 - 01:28 — [Pierre Georlette](#) New

[Page 19: Content Specific Environmental or Human Health Concerns](#)

About the elimination of Deca-BDE or plan to eliminate Deca-BDE by four of the top TV sellers, it would be important and valuable to mention that the only reason behind this action is the unbearable pressure exerted by NGOs such as Greenpeace who are using the media to spread unfounded and frightening rumours to discredit the manufacturers if they don't follow their dictate (Ref. 1, 2 and 3).

Ref. 1: <http://www.roughlydrafted.com/RD/Home/ABC6DFDA-9DE9-4EA8-A269-65EAAB6286...>

Ref. 2: <http://www.roughlydrafted.com/RD/Home/29C5599A-FCD8-4E30-9AD5-5497999ABA...>

Ref. 3: Dr. Patrick Moore, National Post, October 25th 2006: "Lessons learned from exploding laptops"

Mon, 06/18/2007 - 01:35 — [Pierre Georlette](#) New

[Page 14: Environmental Profile \(for servers\)](#)

In the product profile: The claim that the plastic case or shell are likely to contain BFRs that may be hazardous to human health is not sustained by any serious scientific data and is simply a misleading rumours that should not have place here in the EPA SDR document (Ref. 1).

I highly recommend to delete the last sentence.

Ref. 1: O. Manor et al. "Flame retardant and the environment" Specialty Chemicals Magazine, September 2005.

Mon, 06/18/2007 - 00:56 — [Pierre Georlette](#) New

[Page 12: Environmental Profile for Servers](#)

See my comments made for printers and copiers.

Mon, 06/18/2007 - 00:28 — [Pierre Georlette](#) New

[Page 10: Content Specific Enviro or Human Health Concerns](#)

The use of BFRs such as TBBPA in circuit boards and DecaBDE in copiers should not be a topic of Environmental or Human Health concerns.

Indeed, about TBBPA, the SDR should not ignore the published conclusion available from the European Risk Assessment (Ref. 1) showing that no risks have been identified in matter of Human Health. The same can be said about the reactive use of TBBPA into circuit boards: No environmental risk was identified.

Deca-BDE has been found safe for all its uses according a 10 year Risk Assessment made and published by the European Union (Ref. 2). This was also the reason why the European Union exempted it from its RoHS Directive.

It would be important and valuable to mention that the only reason behind the removal of DecaBDE from the products of some manufacturers is the unbearable pressure exerted by NGOs such as Greenpeace who are using the media to spread unfounded rumours to discredit the manufacturers if they don't follow their dictate (Ref. 3, 4 and 5).

It should also not be ignored like you did from my previous comments that the use of BFRs in the housing of copiers are much preferable for recycling to others non brominated FRs (Ref. 6)

Ref. 1: European Union Risk Assessment Report: 2,2',6,6'-tetrabromo-4,4'-isopropylidene diphenol (tetrabromobisphenol-A or TBBP-A). 4th Priority List, Part II – human health Volume 64. European Commission Joint Research Centre, EUR 22161 EN, 2006. http://ecb.jrc.it/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/REPORT/te...

Ref. 2: European Union Risk Assessment Report: Bis(pentabromophenyl ether). 1st Priority List, Volume 17. European Commission Joint Research Centre, EUR 20402 EN, 2002. http://ecb.jrc.it/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/REPORT/de...

Ref. 3: <http://www.roughlydrafted.com/RD/Home/ABC6DFDA-9DE9-4EA8-A269-65EAAB6286...>

Ref. 4: <http://www.roughlydrafted.com/RD/Home/29C5599A-FCD8-4E30-9AD5-5497999ABA...>

Ref. 5: Dr. Patrick Moore, National Post, October 25th 2006: "Lessons learned from exploding laptops"

Ref. 6: T. Imai et al, Comparison of the Recyclability of Flame-Retarded Plastics, Environ. Sci. & Technol., 2003, 37(3), 652-656.

Mon, 06/18/2007 - 00:15 — [Pierre Georlette](#) New

[Page 8: 3.2 Environmental Profile \(about Printers\)](#)

The use of BFRs such as TBBPA in circuit boards and DecaBDE in printers should not be a topic of Environmental or Human Health concerns.

Indeed, about TBBPA, the SDR should not ignore the published conclusion available from the European Risk Assessment (Ref. 1) showing that no risks have been identified in matter of Human Health. The same can be said about the reactive use of TBBPA into circuit boards: No environmental risk was identified.

Deca-BDE has been found safe for all its uses according a 10 year Risk Assessment made and published by the European Union (Ref. 2). This was also the reason why the European Union exempted it from its RoHS Directive.

It would be important and valuable to mention that the only reason behind the removal of DecaBDE from the products of some manufacturers is the unbearable pressure exerted by NGOs such as Greenpeace who are using the media to spread unfounded rumours to discredit the manufacturers if they don't follow their dictate (Ref. 3, 4 and 5).

Ref. 1: European Union Risk Assessment Report: 2,2',6,6'-tetrabromo-4,4'-isopropylidene diphenol (tetrabromobisphenol-A or TBBP-A). 4th Priority List, Part II – human health Volume 64. European Commission Joint Research Centre, EUR 22161 EN, 2006. http://ecb.jrc.it/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/REPORT/te...

Ref. 2: European Union Risk Assessment Report: Bis(pentabromophenyl ether). 1st Priority List, Volume 17. European Commission Joint Research Centre, EUR 20402 EN, 2002. http://ecb.jrc.it/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/REPORT/de...

Ref. 3: <http://www.roughlydrafted.com/RD/Home/ABC6DFDA-9DE9-4EA8-A269-65EAAB6286...>

Ref. 4: <http://www.roughlydrafted.com/RD/Home/29C5599A-FCD8-4E30-9AD5-5497999ABA...>

Ref. 5: Dr. Patrick Moore, National Post, October 25th 2006: "Lessons learned from exploding laptops"

Sun, 06/17/2007 - 23:37 — [Pierre Georlette](#) New

[Page 5: 2. Mobile devices: Content Specific Enviro or Human...](#)

I highly recommend to delete the sentence "BFRs - tetrabromobisphenol-A (TBBPA) and decabromodiphenyl ether (DBBE)" as materials of concern as these materials are not at all of concern for this application!

Indeed, about TBBPA, it is only used in the printed circuit boards and the SDR should not ignore the published conclusion available from the European Risk Assessment (Ref. 1) showing that no risks have been identified in matter of Human Health. The same can be said about the reactive use of TBBPA into circuit boards: No environmental risk was identified.

Deca-BDE is not used in mobile phones and in any case it has been found safe for all its uses according a 10 year Risk Assessment made and published by the European Union (Ref. 2). This was also the reason why the European Union exempted it from its RoHS Directive.

Moreover, in a recently published "Leaching Assessments of Hazardous in Cellular Telephones" (Ref. 3), no brominated flame retardants could be detected in the leaching test made on 34 mobile phones. This confirms that BFRs should not be materials of concern in mobile phones and they should be eliminated from this list.

Ref. 1: European Union Risk Assessment Report: 2,2',6,6'-tetrabromo-4,4'-isopropylidene diphenol (tetrabromobisphenol-A or TBBP-A). 4th Priority List, Part II – human health Volume 64. European Commission Joint Research Centre, EUR 22161 EN, 2006. http://ecb.jrc.it/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/REPORT/te...

Ref. 2: European Union Risk Assessment Report: Bis(pentabromophenyl ether). 1st Priority List, Volume 17. European Commission Joint Research Centre, EUR 20402 EN, 2002. http://ecb.jrc.it/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/REPORT/de...

Ref. 3: John D. Lincoln, Oladele A. Ogunseitan, Andrew A. Shapiro & Jean-Daniel M. Saphores: Leaching Assessments of Hazardous Materials in Cellular Telephones; Environ. Sci. Technol., 41(7), 2572-2578, 2007. ACS Publications.

Sun, 06/17/2007 - 23:17 — [Pierre Georlette](#) New

[Page 2: 1.3 Preliminary Observations...](#)

The statement "...flame retardants that have been identified as constituents of concern - including TBBPA (reacted into circuit boards), decabromodiphenyl ether (Deca-BDE - used primarily in housings that are large plastic parts), and hexabromocyclododecane (HBCD...)..." should be updated. As it looks now, it appears mostly biased and misleading. Indeed it is tendentious, giving very truncated information. It would be expected that the level of information provided by the EPA would be more complete and reliable enabling the reader to make his decision. But as it is now, the reader is left blind with only non sustained rumours as mentioned in the text itself.

Indeed, about TBBPA, the SDR completely ignores the published conclusion available from the European Risk Assessment (Ref. 1) showing that no risks have been identified in matter of Human Health. The same can be said about the reactive use of TBBPA into circuit boards: No environmental risk was identified.

Deca-BDE has been found safe for all its uses according a 10 year Risk Assessment made and published by the European Union (Ref. 2). This was also the reason why the European Union exempted it from its RoHS Directive for E&E applications.

About HBCD, would not it be better to wait for the conclusion of the comprehensive ongoing EU Risk Assessment before spreading rumours.

The draft of this SDR also ignores that several studies are proving that the use of brominated flame retardants are significantly reducing the toxicity of smoke compared with not flame retarded products or in some case bromine free flame retarded plastics (see Ref. 3, 4, 5).

I would suggest or to eliminate completely the paragraph on flame retardants, or to mention the existing ban on few flame retardants such as decabromo biphenyl, penta- and octabromodiphenyl ethers, or a worse solution being to provide a more complete information including the one mentioned here above.

- Ref. 1: European Union Risk Assessment Report: 2,2',6,6'-tetrabromo-4,4'-isopropylidene diphenol (tetrabromobisphenol-A or TBBP-A). 4th Priority List, Part II – human health Volume 64. European Commission Joint Research Centre, EUR 22161 EN, 2006. http://ecb.jrc.it/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/REPORT/te...
- Ref. 2: European Union Risk Assessment Report: Bis(pentabromophenyl ether). 1st Priority List, Volume 17. European Commission Joint Research Centre, EUR 20402 EN, 2002. http://ecb.jrc.it/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/REPORT/de...
- Ref. 3: V. Babrauskas, Flame Hazard Comparison of Flame retarded and non flame retarded products, NBS Special Publication, 1988
- Ref. 4: M. Simonson and H. Stripple, LCA study of Flame retardants in TV Enclosures, Flame Retardants 2000, Interscience Communications, 2000, 159-169.
- Ref. 5: N. Milanov, K. Doods, K. W. Schramm, G. Matuschek, D. Lenoir and A. Kettrup, Comparison between halogenated and phosphorus containing flame retardants in polybutyleneterephthalate: Toxicological and ecotoxicological evaluation of the combustion products, Organohalogen Compounds, 2002, 55, 402.

Thu, 06/14/2007 - 13:44 — [Mario Rufino](#)

[SDR Background Document Pg 9 End of Life Printers](#)

The statistic cited from Canon 2006 regarding 89% recycling for product parts and materials is for certain copiers for re-manufacturing and is not representative of a typical copier. It is also not representative of Canon Printers and this fact can be misconstrued. To avoid misleading the SDR team we request that this statistic be deleted from the Document
