Japan Business Council in Europe

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JBCE'S POSITION ON THE ALTERNATIVES TO AROMATIC BROMINATED FLAME RETARDANTS

INTRODUCTION

Being a cross-sector association with member companies operating in different industries and stages in the supply chain (electronics, chemicals, polymers, automotive, machinery, semiconductors, wholesale trade, precision instruments, pharmaceutical, steel, nonferrous metal, textiles, ceramics, and glass products), JBCE welcomes the opportunity to contribute to the discussion regarding the alternatives to aromatic brominated flame retardants.

KEY MESSAGES

JBCE understands that the call for comments and evidence on alternatives to aromatic brominated flame retardants is in line with the target of having "*a zero-pollution ambition for a toxic-free environment*" which was proposed in the "*Chemicals Strategy for Sustainability - Towards a Toxic-Free Environment- (CSS)*". JBCE agrees with and supports its concept and purpose to protect human health and the environment. To reach this goal efficiently, we would like to highlight some issues regarding alternatives throughout the supply chain and the restrictions, reflecting the positions and concerns of various JBCE member companies across different impacted sectors.

<u>1: Alternatives</u>

- Regarding Electrical and Electronic Equipment (EEE), the final report of RoHS Directive Pack 15[1] states the following about the possibility of substitution: "*In the case of reactive use, DOPO exists as an alternative, but further investigation is required in terms of hazard and residual properties. In addition, it is concluded that substitution is possible from a technical and economic point of view for use as an additive. However, even in this case, the risks to the environment and human body of alternative organophosphorus compounds require additional data on their risk level and the need for further restrictions to avoid unfortunate substitution.* "

  Furthermore, ECHA published a regulatory strategy for flame retardants in 2023[2], evaluating bromine-based, chlorine-based, organophosphorus, and others, but it states that there is insufficient data for some organophosphorus compounds (further data on

[1] Study to support the review of the list of restricted substances and to assess a new exemption request under RoHS 2 (Pack 15)
https://rohs.exemptions.oeko.info/fileadmin/user_upload/RoHS_Pack_15/Final_Results/RoHS_Pack_15_Final_Report_2020_compressed_version.pdf

[2] Regulatory strategy for flame retardants
https://echa.europa.eu/documents/10162/94548e5a-db3c-1850-0a09-ef5f7a1d2c84

hazards needs to be generated).

In response to these reports, JBCE supports the investigation into the replacement of bromine-based flame retardants such as TBBPA to avoid unfortunate substitutions.

On the other hand, if alternative materials which are safe in terms of risks to the environment and human body become available on the market, we welcome the gradual replacement of them in electrical and electronic applications.

Aromatic bromine flame retardants are usually prioritized due to their superior performance and cost, and they are used in a wide range of applications. Halogen flame retardants and alternative flame retardants such as organophosphorus and others have different flame retardant mechanisms. Therefore, it is essential to confirm not only the flame retardant performance of the alternatives but also the performance of the parts and final products containing these alternative flame retardants. This includes aspects such as thermal stability after processing and molding, resin dripping during combustion, weather resistance and insulation properties. It must be proven that the final products perform at the same level after the change in flame retardants.
Therefore, immediate replacement of parts for final products is not realistic at this moment. Further investigation, evaluation, design changes, inventory adjustments are still necessary thus, a sufficient transition period is required.

JBCE would like to suggest to the European Commission and ECHA to provide a forum, such as an alternatives workshop, for all stakeholders in the supply chain. This would allow both upstream and downstream stakeholders to share information, understand each other's intentions, and consider alternatives taking into account environmental impacts.

2: Introduction of restrictions

- **Analytical Methods of Brominated flame retardants**

Brominated flame retardants contained in EEE can generally be analyzed using GC-MS or LC-MS. Furthermore, screening of bromine is also possible using an X-ray fluorescence device (XRF). The following analytical methods currently exist:

・IEC 62321-6
Determination of certain substances in electrotechnical products – Part 6: Polybrominated biphenyls and polybrominated diphenyl ethers in polymers by gas chromatography–mass spectrometry (GC-MS)

・IEC 62321-3-3
Determination of certain substances in electrotechnical products - Part 3-3: Screening - Polybrominated biphenyls, polybrominated diphenyl ethers and phthalates in polymers by gas chromatography-mass spectrometry using a pyrolyser/thermal desorption accessory (Py/TD GC MS)

・IEC 62321-3-1
Determination of certain substances in electrotechnical products – Part 3-1: Screening – Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry

These analytical methods, however, do not cover the aromatic brominated flame retardants listed in Table 1 of the Background Note – Call for evidence and information[3].

- **Standardisation**

There are currently no analytical standards that specify methods for each brominated flame retardant or for the group of flame retardants listed in Table 1. A standardization program for TBBPA[4] is currently under discussion at IEC (International Electrotechnical Commission) (solvent extraction GC-MS method and LC-MS method). For other aromatic brominated flame retardants listed in Table 1, however, there is currently no such action for standardization.

Even if the analysis is performed using GC-MS, LC-MS and XRF, it is not possible to compare the analytical results obtained by each laboratory because each laboratory employs different methods. Under such circumstances, the enforcement and monitoring of the restriction is not possible. Therefore, it will be necessary to standardize analytical methods before putting the restriction in force. Usually, it would take three to five years to establish such standards.

- **Threshold**

The detection limit using GC-MS method is approximately 100 ppb. Although this method allows for precise analysis, it requires advanced skills for the operator. The analysis is normally conducted by specialised laboratories, and therefore this method is inappropriate for screening.

On the other hand, the detection limit of an analysis using the Py/TD-GC-MS method is approximately 100 ppm. This analytical work does not require advanced analytical skills. Therefore, it allows for simple and quick analysis, and is suitable for enforcement and monitoring.

To receive reliable analytical results for enforcement and monitoring, the detection limit needs to be 10 times below the threshold. So, the threshold of 1000 ppm may be appropriate.

- **“Legacy approach” for medical devices and analytical devices**

A long transitional period is especially important for professional use products with long design cycles such as medical devices and analytical devices which model is not frequently changed. For such devices whose Declaration of Conformity is issued before the implementation of the new restriction, we strongly recommend applying the “legacy approach” . It can avoid negative impact on continuous market reliability by interruption of supply. Moreover, it would avoid negative influence on the environment, due to the disposal of the non-compliant inventory.

[3] https://echa.europa.eu/documents/10162/14629653-6fb6-8a79-71ec-24a2fac81ab5
[4] 1PNW 111-720 ED1: Determination of Certain Substances in Electrotechnical Products — Part 15: Tetrabromobisphenol A (TBBPA) in plastics by gas chromatography-mass spectrometry (GC-MS) and liquid chromatography-mass spectrometry (LC-MS))
https://www.iec.ch/dyn/www/f?p=103:38:511561685460780::::FSP_ORG_ID,FSP_APEX_PAGE,FSP_PROJECT_ID:1314,23,119435

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ABOUT JBCE

Founded in 1999, Japan Business Council in Europe (JBCE) is a leading European organisation representing the interests of over 100 multinational companies of Japanese parentage active in Europe. Our members operate across a wide range of sectors, including information and communication technology, electronics, chemicals, automotive, machinery, wholesale trade, precision instruments, pharmaceutical, textiles, and glass products.

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