

BACKGROUND NOTE

CALL FOR EVIDENCE AND INFORMATION ON AROMATIC BROMINATED FLAME RETARDANTS

Introduction and scope

The European Commission has requested ECHA¹ to prepare an investigation report on flame retardants, with a particular focus on aromatic brominated flame retardants. The European Commission mandate specifies that the investigation report should provide an update on hazard information on aromatic brominated flame retardants, which has been become available since the publication of the report 'Regulatory Strategy for Flame Retardants', information on hazard properties of flame retardants that were not covered in the strategy report as well information on uses and the available alternatives.

The report should also provide information on releases of flame retardants from different materials and articles, with a focus on aromatic brominated flame retardants.

This report will support the Commission decide whether to request ECHA to prepare a restriction dossier.

During the investigation stage, several calls for evidence will be carried out to gather information from interested parties.

In this first call for evidence we are requesting information on the uses of aromatic brominated flame retardants. Specifically, we would like to gather information on the sectors where these flame retardants are used, to which materials (polymers) are applied, concentrations in the materials, end-uses, volumes, information on releases as well as end-of-life information per use.

A second call for evidence – with a focus on alternatives - is expected to be launched during spring 2024.

In order to facilitate the data gathering to question n.1 and n.2, we have compiled from various sources a list of sectors and end-uses and prepared an excel format for collecting information on uses and tonnage. To provide inputs on the question concerning waste management, a separate format should be used (see question n.3).

We strongly recommend the respondents to use these excel formats as this will support a more consistent information gathering from the various interested parties.

In areas where no specific information is available, ECHA typically uses realistic worst-case assumptions.

The call for evidence will start on 07 February 2024 and ends on 5 April 2024 (23:59 – Helsinki time).

Note that ECHA is also inviting the interested parties to provide comments on the new draft recommendation to include 5 substances on the Authorisation List. One of the

¹ https://echa.europa.eu/documents/10162/17233/rest_flame_retardants_com_mandate_en.pdf/3e50850a-610d-385b-b5ed-b7dedb35cb46?t=1705476115426

BACKGROUND NOTE - CALL FOR EVIDENCE AND INFORMATION

prioritised substances is Bis(2-ethylhexyl) tetrabromophthalate (TBPH), which is also in the scope of this investigation report. This consultation is open until 7 May 2024. Interested parties are invited to provide information on TBPH via this consultation as well².

Overview of the substances in the scope of the investigation report

The focus of the investigation report is on aromatic brominated flame retardants listed in the Table 1. However, the investigation report will also provide information on other flame retardants.

Table 1. Substances in the scope of the investigation report

Group	EC No.	CAS No.	Substance name
Brominated diphenyl ethyls	284-366-9	84852-53-9	1,1'-(ethane-1,2-diyl)bis[pentabromobenzene]
Brominated diphenyl ethyls	700-158-7	1092834-40-6	Brominated 1,1'-ethane-1,2-diylbisbenzene
Brominated phthalates	237-139-3	13654-74-5	Aluminium tetrabromophthalate (3:2)
Brominated phthalates	242-604-9	18824-74-3	dipotassium 3,4,5,6-tetrabromophthalate
Brominated phthalates	243-885-0	20566-35-2	2-(2-hydroxyethoxy)ethyl 2-hydroxypropyl 3,4,5,6-tetrabromophthalate
Brominated phthalates	246-890-6	25357-79-3	Disodium tetrabromophthalate
Brominated phthalates	247-426-5	26040-51-7	bis(2-ethylhexyl) tetrabromophthalate
Brominated phthalates	256-433-2	49693-09-6	Diallyl tetrabromophthalate
Brominated phthalates	428-050-2		reaction mass of: 2-ethylhexyl 2,3,4,5-tetrabromobenzoate bis(2-ethylhexyl) 3,4,5,6-tetrabromophthalate
Brominated phthalates	616-436-5	77098-07-8	Reaction products of tetrabromophthalic anhydride with 2,2'-oxydiethanol and methyloxirane
Brominated phthalates	627-374-3	5411-70-1	Tetrabromoterephthalic Acid
Brominated phthalates	634-371-0	13810-83-8	1,2-Benzenedicarboxylic acid, 3,4,5,6-tetrabromo-
Brominated phthalates	701-414-0	56720-20-8	
Brominated phthalates	701-415-6	109230-28-6	
TBBPA and its derivatives	201-236-9	79-94-7	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol
TBBPA and its derivatives	221-346-0	3072-84-2	2,2'-[(1-methylethylidene)bis[(2,6-dibromo-4,1-phenylene)oxymethylene]]bisoxirane
TBBPA and its derivatives	244-617-5	21850-44-2	1,1'-(isopropylidene)bis[3,5-dibromo-4-(2,3-dibromopropoxy)benzene]
TBBPA and its derivatives	246-850-8	25327-89-3	1,1'-isopropylidenebis[4-(allyloxy)-3,5-dibromobenzene]
TBBPA and its derivatives	253-693-9	37853-61-5	4,4'-(isopropylidene)bis[2,6-dibromoanisole] m
TBBPA and its derivatives	306-832-3	97416-84-7	1,1'-(isopropylidene)bis[3,5-dibromo-4-(2,3-dibromo-2-methylpropoxy)benzene]
TBBPA and its derivatives	400-440-7		INTERSTAB FR 184
TBBPA and its derivatives	420-850-1		A mixture of: 2-ethyl-[2,6-dibromo-4-[1-[3,5-dibromo-4-(2-hydroxyethoxy)phenyl]-1-methylethyl]phenoxy]propenoate; 2,2'-diethyl-[4,4'-bis(2,6-dibromophenoxy)-1-methylethylidene] dipropenoate; 2,2'-[(1-methylethylidene)bis[[2,6-dibromo-4,1-phenylene)oxy]ethanol]]
TBBPA and its derivatives	436-220-2		2,2-bis(3,5-dibromo-4-(3-acryloyloxy-2-hydroxypropoxy)phenyl)propane
TBBPA and its derivatives	468-980-6		BB 331

² <https://echa.europa.eu/draft-recommendation-for-inclusion-in-the-authorisation-list-consultation>

BACKGROUND NOTE - CALL FOR EVIDENCE AND INFORMATION

Group	EC No.	CAS No.	Substance name
TBBPA and its derivatives	500-107-7	40039-93-8	2,2',6,6'-Tetrabromo-4,4'-isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane
TBBPA and its derivatives	500-399-6	158725-44-1	2,2',6,6'-Tetrabromo-4,4'-isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane and 2,4,6-tribromophenol
TBBPA and its derivatives	600-581-6	1045809-53-7	Phenol, 4,4'-(1-methylethylidene)bis[2,6-dibromo-, polymer with 2-(chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol], Ph ethers
TBBPA and its derivatives	926-564-6		2,2',6,6'-Tetrabromo-4,4'-isopropylidenediphenol, oligomeric reaction products with Propylene oxide and n-butyl glycidyl ether
TBBPA and its derivatives	944-461-4		Reaction mass of 1,1'-(isopropylidene)bis[3,5-dibromo-4-(2,3-dibromo-2-methylpropoxy)benzene] and 1,3-dibromo-2-(2,3-dibromo-2-methylpropoxy)-5-{2-[3,5-dibromo-4-(2,3,3-tribromo-2-methylpropoxy)phenyl]propan-2-yl}benzene
TBBPA and its derivatives	224-005-4	4162-45-2	4,4'-isopropylidenebis(2-(2,6-dibromophenoxy)ethanol)
TBBPA and its derivatives	607-901-3	26265-08-7	4,4'-(1-methylethylidene)bis[2,6-dibromo-, polymer with 2-(chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol]
TBBPA and its derivatives	614-817-0	68928-70-1	Brominated Bisphenol-A type epoxy resin
TBBPA and its derivatives	615-282-6	71342-77-3	2,6-Dibromo-4-[2-(3,5-dibromo-4-hydroxyphenyl)propan-2-yl]phenol
TBBPA and its derivatives	619-012-8	94334-64-2	Phenoxy-terminated tetrabromobisphenol-A carbonate oligomer
TBBPA and its derivatives	641-102-0	68140-84-1	2-Propenoic acid, 2-methyl-, polymer with (chloromethyl)oxirane, 4,4-(1-methylethylidene)bis2,6-dibromophenol and 4,4-(1-methylethylidene)bisphenol
TBBPA and its derivatives	859-183-8	229954-99-8	BROMINATED EPOXY/POLYETHER POLYMER
TBBPA and its derivatives	701-514-4		2,2'-[(1-methylethylidene)bis[(2,6-dibromo-4,1-phenylene)oxymethylene]]bisoxirane and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane and their reaction products with phenol
Other	603-094-7	125904-11-2	Benzene, ethenyl-, ar-bromo derivs.
Other	251-118-6	32588-76-4	N,N'-ethylenebis(3,4,5,6-tetrabromophthalimide)
Other	211-185-4	632-79-1	tetrabromophthalic anhydride
Other	402-550-0		perbromo-n,n'-biphtalimide
Other	243-606-2	20217-01-0	2,4-Dibromophenyl glycidyl ether
Other	253-692-3	37853-59-1	1,1'-[ethane-1,2-diylbisoxo]bis[2,4,6-tribromobenzene]
Other	618-171-0	88497-56-7	Benzene, ethenyl-, homopolymer, brominated
Other	261-767-7	59447-55-1	(Pentabromophenyl)methyl acrylate
Bromophenols	209-706-5	591-20-8	3-bromophenol
Bromophenols	218-602-9	2198-66-5	2-bromo-4-tert-butylphenol
Bromophenols	204-278-6	118-79-6	2,4,6-tribromophenol
Bromophenols	426-040-2	25713-60-4	2,4,6-tris(2,4,6-tribromophenoxy)-1,3,5-triazine
Bromophenols	443-430-8		FIREGUARD FG-1500

Specific information requests

1. Uses of aromatic brominated flame retardants

Kindly provide information on the uses for the substances listed in the Table 1, using the format in the excel file: "**1_Uses**", **Sheet: "a_Use_mapping_50_substances"**.

When including information in the sheet, please select first the EC/List number in column A. The CAS, the substance name and the relevant group to which the substance belongs, will appear automatically in column B, C and D respectively.

In column E indicate your role in the supply chain.

As a next step, select the end-use/application from column F, the sector of use from column G and material/polymer from Column H. For the selection, use the available drop-down lists (as no free text can be included in these columns).

In case you have identified an end-use/application, sector or material which is not included in the list, select "Other" from the relevant list and add the description of the "Other end-use/application" and/or "Other sector" and/or "Other material" in the relevant columns of the sheet (columns I, J and K, respectively).

In column L indicate whether the flame retardant is reactive, polymeric or used as additive (non-polymeric). With regard to the terminology used in the excel file, please note the definition of the following terms:

- **Additive flame retardants** are chemicals added to a material during its manufacturing process. They are mixed into the material to provide fire resistance. Additive flame retardants include polymeric flame retardants, which are polymer structures with inherent fire-resistant properties that are incorporated into (blended with) the polymer matrix during the manufacturing process.
- **Reactive flame retardants** are incorporated into the polymer matrix during the polymerization process itself (i.e. covalently bound).

In columns M and N, indicate the flame retardant's concentration in the base polymer material (lower and upper ends of the range). If you would like to include an explanation on the included figure, please include this in column Q ("Comment"), where any other comment on any other input can also be reported.

In column O indicate whether the selected flame retardant has any additional functionality (other than flame retardancy) in the reported use. If the substance does have other functionalities (e.g. as plasticising function), this additional functionality should be described in column P.

If you intend to submit information on more than two uses for one single substance, you will need to select the substance separately each time in a new row, by selecting the relevant EC number from the dropdown list (or by dragging down the cell with the relevant EC number).

Additional instructions on how to fill the format appear automatically when clicking on the cells from the headers (cells coloured in salmon pink).

Please note that in each drop-down list, there is always an empty field on which you can click on in case you would like to cancel a selection. Alternatively, to cancel a selection you can simply delete its content from the cell.

BACKGROUND NOTE - CALL FOR EVIDENCE AND INFORMATION

In case you would like to report information for a substance which is not included in the above list, use the sheet: **b_Use_mapping_Other_substances** of the same file. This sheet can be in particular used for reporting information on polymeric flame retardants.

If you do not have information for some columns, leave them empty.

2. Tonnage information

Please indicate the tonnages (t/y as single numbers or ranges) of aromatic brominated flame retardants placed on the EU market that are allocated to different sectors as well as end-use/applications.

Tonnage information should be reported using the excel format "**2.FR_Volumes_in_end_uses**".

Please note that the tonnages should be reported only for the substances and not for the whole formulations of the flame retardant products.

When responding to this question, you are kindly invited to provide information on the tonnages of aromatic brominated flame retardants placed on the EU market, that can be attributed to the production in the EU of the final applications (end-uses). For example if you are providing information on the adhesives used in the automotive sector, report the tonnages of aromatic brominated substances – placed on the EU market – that are used in the production of the adhesives for the automotive sector. If information on tonnage for the end use/application is not available, you can also report only tonnage information for the relevant sector.

Please note that depending on the available information you can submit tonnage information:

- for specific substances from Table 1, after selecting the relevant EC number from the list in column A of the format
- for group of substances from Table 1 (e.g. you can provide information on TBBPA, and its derivatives or other groups listed in sheet2 of the format), after including the Group name in column B of the format.
- for additional substances which are not included in column A of the format. In this case you can include the name of the substance (and EC number if available) in column B.

In column D and E select from the dropdown lists the relevant end-use/application and sector respectively. If you would like to include information for other end-uses/application or sector/s, describe the other end-use or the other sector in column F and G respectively.

Report the tonnages of aromatic brominated flame retardants allocated to each end-use (final application) using columns H and I. Any explanation or comment on the provided figure can be included in column J.

Include only the tonnages of the actual substances (and not the whole formulation) as a number expressed in the unit tonnes per year. Do not include any symbol or text.

3. End-of-life information on products containing aromatic brominated flame retardants

- a. Please indicate the percentage of products (containing aromatic brominated flame

BACKGROUND NOTE - CALL FOR EVIDENCE AND INFORMATION

retardants) that are incinerated, landfilled, reused/refurbished, recycled and exported as waste at end of life. When providing the response, you are kindly invited to use the Excel file: "**3.End of life**".

- b. Kindly provide information on national/regional statutory requirements and voluntary commitments on recycling rates, if available for, e.g., specific end uses.
- c. Provide information on the technical and economic feasibility to analytically differentiate between aromatic brominated flame retardants in materials and waste streams.
- d. Discuss the possibility to analytically identify aromatic bromine originating from a substance within the scope of the investigation report vs other possible sources.
- e. Discuss the technical and economic feasibility to differentiate waste streams of polymeric materials on the basis of whether the aromatic flame retardants are present as additives (free brominated substances) or bound to the polymer.
- f. Indicate the minimum concentration of unbound (additive) aromatic brominated flame achievable in the recyclates, and whether this varies per type of substance (or subgroup). Discuss both technical and economic aspects.

4. Information on releases:

- a. Kindly provide available release information for the different environmental compartments (e.g. study reports, monitoring data) which has been derived on experimental/measured basis. The information may be provided on single substances and/or on groups of substances listed in Table 1.

For example, results of migration tests of specific aromatic brominated flame retardant, environmental exposure monitoring campaigns (especially those representing exposures from end-uses and end-of-life stages) are welcomed. Also release information (e.g. in form of release factors) derived for specific professional/consumer end-uses or end-of-life stages/-processes are welcomed if they have been derived using measured data.

- b. Kindly provide information on any product specific emission/migration standards (unless specified in the EU legislation) applied for the end-uses indicated under question 1. Information on national/regional product emission/migration standards are also welcome.

How to submit: kindly provide description in the field below or with your own attachment.

5. Additional relevant information on topics different from those addressed in questions 1-4.

Who should participate to the call for evidence?

This call for evidence is intended for interested parties such as private companies (manufacturers, suppliers, recyclers, downstream users, distributors, importers, alternative suppliers, etc.), trade associations, scientific organisations, NGOs and other stakeholders or Member State Authorities holding relevant information. Both EU/EEA and non-EU stakeholders are encouraged to participate. Information can be submitted confidentially and will be treated as such by ECHA.

<https://echa.europa.eu/calls-for-comments-and-evidence>

For any clarifications please contact: flame-retardants@echa.europa.eu

How to submit a comment in the call for evidence

When you are ready to make your comments, click on the appropriate link in the "How to submit your contribution" field. Please be aware that it is not possible to save your submission and come back to it, so you should already have your comments prepared in an attachment or saved in some other format in advance.

The web form contains five main parts:

- Section I: Personal information
- Section II: Organisation
- Section III: Non-confidential comments - both general comments and information on specific issues (see below). Your responses can be entered directly into the form or through section 4 as an attachment. However, please do not submit the same comments via both means.
- Section IV: Non-confidential attachments can be added here.
- Section V: Confidential attachments can be added here. Confidential information will only be available to the ECHA Secretariat, the Committees and Member State Competent Authorities. However, if ECHA receives an Access to Documents request, we may come back to you for justifications why the information is confidential. You can also add this information already in the relevant part of the webform.

Once you have finished your submission press the "Submit to ECHA" button and your comments will be submitted. You will receive a submission number via e-mail and you should refer to this in any communication with ECHA on this issue.

It is not possible for you to retrieve your submission so you may want to take a screen shot, or printed copy for your future reference.