Helsinki, 12 April 2018

Substance name: 2,2',6,6'-Tetrabromo-4,4'-isopropylidenediphenol, oligomeric reaction products with Propylene oxide and n-butyl glycidyl ether
EC number: 926-564-6
CAS number: N/A
Date of Latest submission(s) considered[1]: 22 July 2016
Decision/annotation number: Please refer to the REACH-IT message which delivered this communication (in format SEV-D-XXXXXXXXXX-XX-XX/F)
Addressees: Registrant(s)[2] of 2,2',6,6'-Tetrabromo-4,4'-isopropylidenediphenol, oligomeric reaction products with Propylene oxide and n-butyl glycidyl ether

DECISION ON SUBSTANCE EVALUATION

1. Requested information

Based on Article 46(1) of Regulation (EC) No 1907/2006 (the 'REACH Regulation'), you are requested to submit the following information on the registered substance:

- Bioaccumulation in aquatic species; test method: Bioaccumulation in Fish: Aqueous and Dietary Exposure, OECD 305, using the registered substance as further specified in Appendix 1 and the dietary exposure route.

You shall provide an update of the registration dossier(s) containing the requested information, including robust study summaries and, where relevant, an update of the Chemical Safety Report by **19 April 2019**.

The reasons of this decision and further test specifications are set out in Appendix 1. The procedural history is described in Appendix 2. Further information, observations and technical guidance are provided in Appendix 3. Appendix 4 contains a list of identified constituents and their properties and structural formulas. Appendix 5 contains a list of registration numbers for the addressees of this decision. Appendices 4 and 5 are confidential and not included in the public version of this decision.

2. Who performs the testing

Based on Article 53 of the REACH Regulation, you are requested to inform ECHA who will carry out the study on behalf of all Registrant(s) within 90 days. Instructions on how to do this are provided in Appendix 3.

[1] This decision is based on the registration dossier(s) at the end of the 12 month evaluation period.

[2] The terms Registrant(s), dossier(s) or registration(s) are used throughout the decision, irrespective of the number of registrants addressed by the decision.

3. Appeal

You can appeal this decision to the Board of Appeal of ECHA within three months of its notification. An appeal, together with the grounds thereof, shall be submitted to ECHA in writing. An appeal has suspensive effect and is subject to a fee. Further details are described under http://echa.europa.eu/regulations/appeals

Authorised[3] by Leena Ylä-Mononen, Director of Evaluation

[3] As this is an electronic document, it is not physically signed. This communication has been approved according to ECHA's internal decision-approval process.

Appendix 1: Reasons

Based on the evaluation of all relevant information submitted on 2,2',6,6'-Tetrabromo-4,4'-isopropylidenediphenol, oligomeric reaction products with Propylene oxide and n-butyl glycidyl ether (hereafter 'TBBPA-PO-nBGE') and other relevant available information, ECHA concludes that further information is required in order to enable the evaluating Member State Competent Authority (MSCA) to complete the evaluation of whether the substance constitutes a risk to the environment.

The evaluating MSCA will subsequently review the information submitted by you and evaluate if further information should be requested in order to clarify the concern for suspected PBT/vPvB.

Assessment of PBT properties

According to data in the registration dossier, the registered UVCB substance is not readily biodegradable (OECD TG 301F gave 0% degradation in 28 d). Furthermore, there is an inherent biodegradation test in the registration dossier (OECD TG 302C) showing 4% degradation in 28 d. Based on these results from screening tests, you conclude in the registration that the substance fulfils the vP criteria according to Annex XIII of REACH. Although these screening tests do neither inform on the question of bioavailability of the substance nor on possible primary biodegradation, the evaluating MSCA considers that the available information, together with additional information from QSAR estimations and information from structurally similar substances, is sufficient to assess the persistency (but not fully assessing vP) for this substance at this step of the evaluation and that it is thus appropriate to focus the information request on bioaccumulation at this stage. Thus, further testing on the degradation of the substance, e.g. via a simulation test, is currently not considered necessary to clarify the concern of PBT properties.

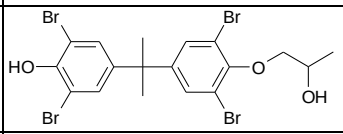
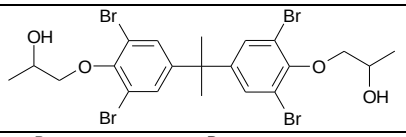
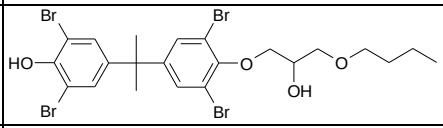
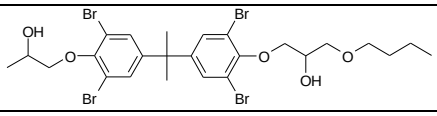
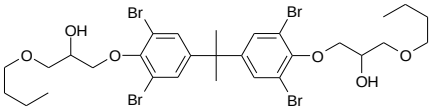
The measured octanol-water partition coefficients (log K_{ow}) of the identified constituents of the UVCB are in the range of 4.5 to 6.9. Based on QSAR predictions, the identified constituents fulfil the screening criterion for B.

Long-term aquatic toxicity data for fish or daphnia are not available. Therefore, a comparison with the Annex XIII T-criterion with respect to the environment is not possible. Based on the available information in the registration dossier, the substance does not fulfil the T criterion with respect to human health as laid out in Annex XIII, i.e. there is no entry in Annex VI of the CLP Regulation for harmonised classification of the substance or its identified constituents as Carc. 1, Muta. 1, Repr. or STOT RE 1/2. No self-classification of the substance with regards to human health endpoints exists. Thus, available data does not suggest that the T criterion might be fulfilled with regard to mammalian toxicity.

Overall, based on current information, TBBPA-PO-nBGE may be a PBT or vPvB - substance. Further information on bioaccumulation is considered necessary to clarify the PBT and vPvB status of TBBPA-PO-nBGE.

TBBPA-PO-nBGE is a UVCB substance containing five identified constituents (see Table 1) at well-defined concentration ranges. The identity of one further constituent is unknown with a share of 3.8 % in the UVCB. All identified constituents contain a 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol (TBBPA) basic structure with side chains of different lengths in para-position.

Table 1: Constituents of TBBPA- PO-nBGE.

No.	Constituent	IUPAC name	Structural formula
1	TBBPA+PO	2,6-dibromo-4-{1-[3,5-dibromo-4-(2-hydroxypropoxy)phenyl]-1-methylethyl}phenol	
2	TBBPA+2PO	1-(2,6-dibromo-4-{1-[3,5-dibromo-4-(2-hydroxypropoxy)phenyl]-1-methylethyl}phenoxy)-2-propanol	
3	TBBPA+nBGE	2,6-dibromo-4-{1-[3,5-dibromo-4-(3-butoxy-2-hydroxypropoxy)phenyl]-1-methylethyl}phenol	
4	TBBPA+nBGE+PO	3-butoxy-1-(2,6-dibromo-4-{1-[3,5-dibromo-4-(2-hydroxypropoxy)phenyl]-1-methylethyl}phenoxy)-2-propanol	
5	TBBPA+2nBGE	3-butoxy-1-(2,6-dibromo-4-{1-[3,5-dibromo-4-(3-butoxy-2-hydroxypropoxy)phenyl]-1-methylethyl}phenoxy)-2-propanol	
6	Unknown		

All constituents fulfil the screening criteria for B. Based on the analytical results in the registration dossier and based on your comments on the draft decision in relation to the bioaccumulation request indicating that an HPLC-MS analytical method is available for this substance, the evaluating MSCA considers it possible to analytically distinguish between the different constituents when testing the whole substance in a bioaccumulation study. Thus, ECHA considers testing of the registered substance in a bioaccumulation study (dietary exposure) as feasible and necessary to inform on the bioaccumulation potential of the substance's constituents.

Registrant's comments to the draft decision and proposals for amendments (relevant to the testing strategy)

The original testing strategy included aquatic toxicity testing of the registered substance and one of its constituents considered as a worst-case for PBT properties by the evaluating MSCA, followed by conditional bioaccumulation testing of this constituent. In your comments, you expressed preference to start with toxicity testing and for testing of the whole substance both in toxicity and bioaccumulation testing. Based on proposals for amendment (PfA) by a Member State competent authority, the testing strategy was changed to no longer require immediate toxicity testing because this also leads to less vertebrate testing compared to the original testing strategy for addressing the identified concerned.

The original testing strategy also required aquatic toxicity testing in fish and daphnia using the whole registered substance using water-accommodated fractions (WAF). Based on PfAs by Member State competent authorities, this information request was removed because it was not considered appropriate to test the whole UVCB substance using a WAF approach for PBT assessment. Furthermore, it was considered that B assessment

should be conducted first to determine which data would be required to further assess the PBT properties and to potentially minimise animal testing compared to the original testing strategy. Regarding the now required test for bioaccumulation, your preference for testing the whole substance has been taken into account.

What is the possible regulatory outcome?

Depending on the results from the requested study additional testing may be requested in a second decision to further investigate the PBT and vPvP properties of the substance.

If it is concluded that the registered substance meets the PBT/vPvB criteria according to REACH Annex XIII, the substance may become a candidate for identification as substance of very high concern or other regulatory activities that will be determined afterwards.

Bioaccumulation in aquatic species: test method Bioaccumulation in Fish: Aqueous and Dietary Exposure, OECD 305, using the registered substance as further specified in Appendix 1 and the dietary exposure route, OECD 305

The concern identified and why new information is needed

Suspected bioaccumulative substance

In the registration, you reported a log K_{ow} of 4.8 for the whole substance. For this, the values of the constituents have been combined; the single constituents were not considered. The BCF was predicted with QSAR based on this log K_{ow}. The BCF of one of the reaction starting materials was reported to be 379.

Based on experimental log K_{ow} values (provided by you during the process of substance evaluation) in the range from 4.5 to 6.9, the substance and the identified constituents fulfil the screening criterion for B according to REACH Annex XIII (see Appendix 4 for details). The experimental log K_{ow} values indicate that the BCFs for the constituents may be above 2000. QSAR predictions for BFCs (QSAR BCFBAW) were performed for the identified constituents and are 240, 378, 1097, 1487, and 9205, respectively (see Appendix 4). These predictions should be used with caution since experimentally determined BCFs may be higher. A decisive conclusion whether any of the constituents of TBBPA-PO-nBGE meets the B/vB criterion according to REACH Annex XIII cannot be drawn solely based on this screening information.

Therefore, ECHA considers further testing as necessary in order to verify if the B or vB criterion according to REACH Annex XIII is fulfilled.

Registrant's comments to the draft decision and proposals for amendments (relevant to bioaccumulation)

In your comments to the draft decision and to the PfAs by Member State competent authorities, you remark that ECHA should only request the bioaccumulation study with dietary exposure in case defined criteria for the evaluation of this dietary exposure study are part of the decision. However, you likewise express preference for the testing of the whole substance rather than single constituents. As the substance is a UVCB, ECHA considers that in case of testing of the whole substance, dietary exposure has to be conducted because testing of mixtures is addressed in the OECD TG 305 only in the section for dietary exposure. While ECHA agrees that the interpretation of a feeding study with regards to the B/vB criterion is complex, it is considered possible. The OECD

Guidance Document on Aspects of OECD TG 305 on Fish Bioaccumulation (Series on Testing and Assessment No. 264, 19 July 2017) provides guidance on estimation of BCF from dietary study data. Section R.7.10.4.1 of ECHA Guidance on Information Requirements and Chemical Safety Assessment, Chapter R7c: Endpoint specific guidance (Version 3.0, June 2017) provides guidance on how to use the data from a fish dietary bioaccumulation test for bioaccumulation assessment and refers to Section 4.1.2.3: Experimental dietary biomagnification in fish (experimental dietary BMF) of ECHA Guidance on Information Requirements and Chemical Safety Assessment Chapter R.11: PBT/vPvB Assessment (Version 3.0, June 2017).

The request is not adapted as the evaluating MSCA will base the evaluation of the study results on the guidance documents and the application of Annex XIII of the REACH regulation. This weight-of-evidence approach will take into account all available data.

Regarding the use of radiolabelled test substance, you commented that in your view there is no reason for such an expensive request and an HPLC-MS method is available, which was already shown to be sensitive and allowed the determination of the substance identity in the REACH dossier. ECHA recognises that the use of radiolabelling is a more expensive analytical method than HPLC-MS. However, the use of radiolabelled test substance, in addition to parent substance analysis, is needed to allow assessment of the accumulation of any metabolites formed in the study. Metabolism could be expected by analogy to the substance tetrabromobisphenol A (CAS 79-94-7) which metabolised in a fish BCF study reported in the EU ESR risk assessment report of February 2008 (https://echa.europa.eu/documents/10162/17c7379e-f47b-4a76-aa43-060da5830c07). If other suitable methods are available to determine the accumulation of any metabolites, it is possible to use them instead of radiolabelling.

Considerations on the test method

In general, aqueous exposure should preferably be used in the OECD 305 test because decisive BCF trigger values (for comparison against the B and vB criterion) exist in contrast to the BMF. However, in this case for several of the constituents, aqueous exposure will likely not be possible based on the predicted poor water solubility and the log K_{OW}. Thus, the testing of the whole substance with different constituents in one test is only possible with dietary exposure. This is in line with OECD 305 specifications.

A suitable analytical method, such as using radiolabeled test substance, shall be applied along with parent substance analysis to allow an assessment of the relevant contribution of metabolites to any observed accumulation.

As stipulated in the OECD 305 TG, the organic carbon content of the test water (e.g. from fish excreta and food residues) should be kept as low as possible, and efforts shall be made to establish the truly dissolved concentration, for example by taking measurements of particulate and dissolved organic carbon concentrations at appropriate time points and using an appropriate technique to enable the estimation of the bioavailable fraction if feasible (e.g. solid-phase micro-extraction). Excessive fish growth and lipid increases should also be avoided, since these might influence the results. The results should in any case be corrected for growth and normalized to 5% lipid content.

Alternative approaches and proportionality of the request

It would be possible to start the testing strategy to clarify the PBT/vPvB concern with simulation testing on degradation to investigate P/vP properties of the constituents.

However, simulation testing with the whole substance may be technically very difficult and additional bioaccumulation testing would likely be needed as the evaluating MSCA considers there is a high chance that this simulation testing would solely be confirmatory at least for the P status of the substance. Results of the bioaccumulation testing of the whole substance will allow the evaluating MSCA to determine which constituents (if any) meet the B/vB criteria and thus will identify those constituents which may require additional testing to clarify their vP and T properties.

It would be possible to test several constituents in individual bioaccumulation tests using aqueous exposure. However, for some constituents, only dietary exposure may be possible due to their low water solubility. Additionally, in case of aqueous exposure study, up to five tests of the different constituents might be considered, which however would require a significantly higher number of vertebrate animals than the adapted testing strategy of this decision.

ECHA notes that no equally suitable alternative way is available to obtain this information.

Conclusion

Therefore, based on the substance evaluation and pursuant to Article 46(1) of the REACH Regulation, ECHA concludes that you are required to carry out the following study using the registered substance subject to this decision and the dietary exposure route: Bioaccumulation in aquatic species; test method: Bioaccumulation in Fish: Aqueous and Dietary Exposure, OECD 305.

Deadline to submit the requested Information

In the draft decision communicated to you, the time indicated to provide the requested information based on tiered, conditional testing was 15 to 45 months from the date of adoption of the decision depending on the outcome of the required tests. This period of time took into account the fact that the draft decision also requested OECD 210 and OECD 211 tests on the whole substance and, conditionally, on a single constituent. Therefore, the request of an OECD 305 bioaccumulation study was dependent on the outcome of these previous studies. As these studies are no longer requested in the present decision, ECHA considers that a reasonable time period for providing the required information in the form of an updated registration is 12 months from the date of the adoption of the decision. The original draft decision included a deadline of 9 months for the conditional bioaccumulation test. The decision was therefore modified accordingly.

References

OECD Guidance Document on Aquatic Toxicity Testing of Difficult Substances and Mixtures; (OECD Series on Testing and Assessment - Number 23) 2002.

Appendix 2: Procedural history

On the basis of an opinion of the ECHA Member State Committee and due to initial grounds for concern relating to Potential endocrine disruptor, Suspected PBT/vPvB and Exposure of environment 2,2',6,6'-Tetrabromo-4,4'-isopropylidenediphenol, oligomeric reaction products with Propylene oxide and n-butyl glycidyl ether(EC No 926-564-6) was included in the Community rolling action plan (CoRAP) for substance evaluation to be evaluated in 2016. The updated CoRAP was published on the ECHA website on 22 March 2016. The Competent Authority of Germany (hereafter called the evaluating MSCA) was appointed to carry out the evaluation.

Pursuant to Article 45(4) of the REACH Regulation the evaluating MSCA carried out the evaluation of the above substance based on the information in your registration(s) and other relevant and available information.

In the course of the evaluation, the evaluating MSCA identified an additional concern regarding long-term aquatic toxicity.

The evaluating MSCA considered that further information was required to clarify the following concerns: Suspected PBT/vPvB. Therefore, it prepared a draft decision pursuant to Article 46(1) of the REACH Regulation to request further information. It submitted the draft decision to ECHA on 21 March 2017.

The decision making followed the procedure of Articles 50 and 52 of the REACH Regulation.

ECHA notified you of the draft decision and invited you to provide comments.

Registrant(s)' commenting phase

ECHA received comments from you and forwarded them to the evaluating MSCA without delay.

The evaluating MSCA took into account the comments from the Registrant and they are reflected in the Reasons (Appendix 1). The requested information was not changed in response to the submitted comments.

Proposals for amendment by other MSCAs and ECHA and referral to Member State Committee

The evaluating MSCA notified the draft decision to the Competent Authorities of the other Member States and ECHA for proposals for amendment.

Subsequently, the evaluating MSCA received proposals for amendment to the draft decision and modified the draft decision. They are reflected in the reasons (Appendix 1).

ECHA referred the draft decision, together with your comments, to the Member State Committee.

ECHA invited you to comment on the proposed amendments.

Your comments on the proposed amendments were taken into account by the Member State Committee.

MSC agreement seeking stage

The Member State Committee reached a unanimous agreement on the draft decision during its MSC-58 meeting and ECHA took the decision according to Article 52(2) and 51(6) of the REACH Regulation.

EUROPEAN CHEMICALS AGENCY

Appendix 3: Further information, observations and technical guidance

1. This decision does not imply that the information provided by you in the registration(s) is in compliance with the REACH requirements. The decision neither prevents ECHA from initiating compliance checks on your dossier(s) at a later stage, nor does it prevent a subsequent decision under the current substance evaluation or a new substance evaluation process once the present substance evaluation has been completed.

2. Failure to comply with the request(s) in this decision, or to fulfil otherwise the information requirement(s) with a valid and documented adaptation, will result in a notification to the enforcement authorities of your Member State.

3. In relation to the required experimental study, the sample of the substance to be used shall have a composition that is within the specifications of the substance composition that are given by all Registrant(s). It is the responsibility of all the Registrant(s) to agree on the tested material to be subjected to the test(s) subject to this decision and to document the necessary information on composition of the test material. The substance identity information of the registered substance and of the sample tested must enable the evaluating MSCA and ECHA to confirm the relevance of the testing for the substance subject to substance evaluation.

4. In relation to the experimental study the legal text foresees the sharing of information and costs between Registrant(s) (Article 53 of the REACH Regulation). You are therefore required to make every effort to reach an agreement regarding each experimental study for every endpoint as to who is to carry out the study on behalf of the other Registrant(s) and to inform ECHA accordingly within 90 days from the date of this decision under Article 53(1) of the REACH Regulation. This information should be submitted to ECHA using the following form stating the decision number above at:
https://comments.echa.europa.eu/comments_cms/SEDraftDecisionComments.aspx

   Further advice can be found at
http://echa.europa.eu/regulations/reach/registration/data-sharing. If ECHA is not informed of such agreement within 90 days, it will designate one of the Registrants to perform the study on behalf of all of them.