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Bundesanstalt für Arbeitsschutz und Arbeitsmedizin
Federal Institute for Occupational Safety and Health

Justification Document for the Selection of a CoRAP Substance

Substance Name (public name):	1,1'-(isopropylidene)bis[3,5-dibromo-4-(2,3-dibromopropoxy)benzene]
EC Number:	244-617-5
CAS Number:	21850-44-2
Authority:	22/03/2016

Note

This document has been prepared by the evaluating Member State(s) given in the CoRAP update.

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1 IDENTITY OF THE SUBSTANCE

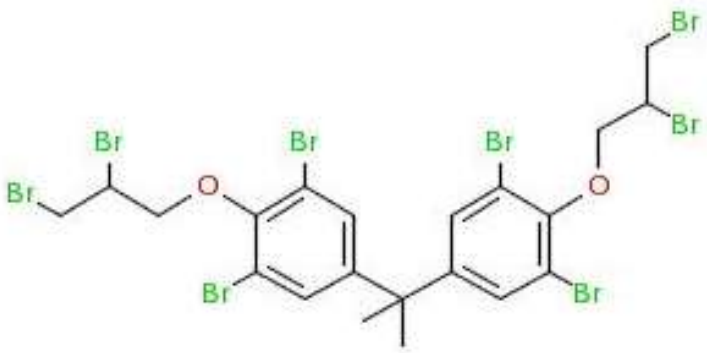
1.1 Other identifiers of the substance

Table: Other Substance identifiers

EC name (public):	1,1'-(isopropylidene)bis[3,5-dibromo-4-(2,3-dibromopropoxy)benzene]
IUPAC name (public):	1,1'-propane-2,2-diylbis[3,5-dibromo-4-(2,3-dibromopropoxy)benzene]
Index number in Annex VI of the CLP Regulation:	-
Molecular formula:	$C_{21}H_{20}Br_8O_2$
Molecular weight or molecular weight range:	943.624 g/mol
Synonyms:	TBBPA-DBPE, BDDP, AP 1968, AP 1968G, AP 1968P

Type of substance ☒ Mono-constituent ☐ Multi-constituent ☐ UVCB

Structural formula:



2 OVERVIEW OF OTHER PROCESSES / EU LEGISLATION

Table: Completed or ongoing processes

RMOA	☐ Risk Management Option Analysis (RMOA)	
REACH Processes	Evaluation	☐ Compliance check, Final decision
		☒ Testing proposal
		☐ CoRAP and Substance Evaluation
	Authorisa-tion	☐ Candidate List
		☐ Annex XIV
	Restri-ction	☐ Annex XVII[1]
Harmo-nised C&L	☐ Annex VI (CLP) (see section 3.1)	
Processes under other EU legislation	☐ Plant Protection Products Regulation Regulation (EC) No 1107/2009	
	☐ Biocidal Product Regulation Regulation (EU) 528/2012 and amendments	
Previous legisla-tion	☐ Dangerous substances Directive Directive 67/548/EEC (NONS)	
	☐ Existing Substances Regulation Regulation 793/93/EEC (RAR/RRS)	
(UNEP) Stockholm convention (POPs Protocol)	☐ Assessment	
	☐ In relevant Annex	
Other process/ EU legisla-tion	☐ Other (provide further details below)	

There has been testing proposal for a two-generation studyand prenatal developmetal toxicity study..

[1] Please specify the relevant entry.

3 HAZARD INFORMATION (INCLUDING CLASSIFICATION)

3.1 Classification

3.1.1 Harmonised Classification in Annex VI of the CLP

No harmonised classification is available.

3.1.2 Self classification

Not classified in the registration dossier. No additional notifications exist.

3.1.3 Proposal for Harmonised Classification in Annex VI of the CLP

Currently, no proposal for harmonized classification and labeling is available.

4 INFORMATION ON (AGGREGATED) TONNAGE AND USES[2]

4.1 Tonnage and registration status

Table: Tonnage and registration status

From ECHA dissemination site (accessed in April 2015)		
☒ Full registration(s) (Art. 10)	☐ Intermediate registration(s) (Art. 17 and/or 18)	
Tonnage band (as per dissemination site)		
☐ 1 – 10 tpa	☐ 10 – 100 tpa	☐ 100 – 1000 tpa
☒ 1000 – 10,000 tpa	☐ 10,000 – 100,000 tpa	☐ 100,000 – 1,000,000 tpa
☐ 1,000,000 – 10,000,000 tpa	☐ 10,000,000 – 100,000,000 tpa	☐ > 100,000,000 tpa
☐ <1 . . . . . >+ tpa (e.g. 10+ ; 100+ ; 10,000+ tpa)		☐ Confidential
Joint Submission.		

4.2 Overview of uses

To demonstrate the environmental relevance of the selected substance the uses and their possible contribution to environmental exposure are given in Part 2 of the table below.

Table: Uses

Part 1:

☐ Manufacture	☒ Formulation	☒ Industrial use	☐ Professional use	☐ Consumer use	☒ Article service life	☐ Closed system

Part 2:

	Use(s)
Formulation	The substance is used in closed processes during the preparation of polymers. However, since the substance is not covalently bound to the polymer matrix a continous release to man and environment during the article service life is reasonable.
Uses at industrial sites	The environmental release categories are pointing to a possible wide dispersive exposure of the environment via these uses as a flame retardant in plastic articles.
Article service life	The ERC provided by the registrants are ERC 10a and 11a pointing to wide dispersive outdoor and indoor use of long life plastic articles with low release. However, especially the wide dispersive outdoor use combined with the very high persistency of the substance raises exposure concern for environmental compartments.

[2] *Data taken from ECHA dissemination site (accessed in May 2015)*

5. JUSTIFICATION FOR THE SELECTION OF THE CANDIDATE CoRAP SUBSTANCE

5.1. Legal basis for the proposal

☒ Article 44(2) (refined prioritisation criteria for substance evaluation)

☐ Article 45(5) (Member State priority)

5.2. Selection criteria met (why the substance qualifies for being in CoRAP)

☐ Fulfils criteria as CMR/ Suspected CMR

☐ Fulfils criteria as Sensitiser/ Suspected sensitiser

☒ Fulfils criteria as potential endocrine disrupter

☒ Fulfils criteria as PBT/vPvB / Suspected PBT/vPvB

☒ Fulfils criteria high (aggregated) tonnage (*tpa > 1000*)

☒ Fulfils exposure criteria

☐ Fulfils MS's (national) priorities

5.3 Initial grounds for concern to be clarified under Substance Evaluation

Hazard based concerns		
CMR ☐ C ☐ M ☐ R	Suspected CMR[1] ☐ C ☐ M ☐ R	☒ Potential endocrine disruptor
☐ Sensitiser	☐ Suspected Sensitiser[3]	
☐ PBT/vPvB	☒ Suspected PBT/vPvB[1]	☐ Other (please specify below)
Exposure/risk based concerns		
☐ Wide dispersive use	☐ Consumer use	☐ Exposure of sensitive populations
☐ Exposure of environment	☐ Exposure of workers	☐ Cumulative exposure
☐ High RCR	☒ High (aggregated) tonnage	☐ Other (please specify below)

[3] CMR/Sensitiser: known carcinogenic and/or mutagenic and/or reprotoxic properties/known sensitising properties (according to CLP harmonized or registrant self-classification or CLP Inventory)
Suspected CMR/Suspected sensitiser: suspected carcinogenic and/or mutagenic and/or reprotoxic properties/suspected sensitising properties (not classified according to CLP harmonized or registrant self-classification)
Suspected PBT: Potentially Persistent, Bioaccumulative and Toxic

ED-concern:

For TBBPA-DBPE it could be shown in various *in vitro* assays (Hamers et al., 2006) that it interferes with the transport of the T4 hormone in the circulating blood stream by competitively binding to the T4 plasma transport protein transthyretrin (TTR) and that the substance could interact with the metabolism of E2 by strongly inhibiting the enzyme estradiol sulfotransferase. Furthermore, the tetrabromo bisphenol A (TBBPA) substructure, being part of the TBBPA-DBPE molecule, provides a structural alert pointing to possible endocrine activity of degradation products of the mother compound, since TBBPA and some derivatives are known as weak estrogen agonists. However, owing to the very high persistency of the TBBPA-DBPE molecule the relevance of degradation products for the overall endocrine disruption potential of the substance seems to be low.

vBvP concern:

The data provided by the registrants within the registration dossier clearly show that the vP criteria (not readily biodegradable, hydrolysis half life > 1 year, no biodegradation found in a water/sediment system under anaerobic conditions) for TBBPA-DBPE are fulfilled. Consequently, the registrants themselfs consider the substance to be vP. Concerning the bioaccumulation potential of TBBPA-DBPE the data provided in the registration dossier point to a slight potency for bioconcentration in fish (OECD 28d flow through study with carp) and to no bioaccumulation potential during a 21 day exposure via soil in adult earth worms. However, taking into account the high persistency of TBBPA-DBPE in the environment, the wide dispersive use in high tonnage of the chemical as flame retardant and its possible endocrine activity, the bioaccumulation potential needs to be further investigated using studies (*e.g.* feeding studies), which seem to be more appropriate for highly lipophilic substances than the protocols used for generating the registration data.

5.4 Preliminary indication of information that may need to be requested t clarify the concern

☐ Information on toxicological properties	☐ Information on physico-chemical properties
☐ Information on fate and behaviour	☐ Information on exposure
☒ Information on ecotoxicological properties	☐ Information on uses
☒ Information ED potential	☐ Other (provide further details below)

To clarify the ED concern further data on the organism level are necessary to conclude for the environment on apical adverse effects on organisms. So far, only *in vitro* data pointing to the interference of TBBPA-DBPE with the thyroidal and estrogenic pathways of hormonal action are available. Additionally, even TBBPA-DBPE seems to be very persistent in the environment it remains unclear whether liver metabolism in wildlife species might yield TBBPA metabolites that are also known to be weak endocrine disrupters. To obtain these data non standard *in vitro* and *in vivo* assays and/or endpoints (*e.g.* receptor binding studies with S9 mix application, an Amphibian metamorphosis assay (AMA – OECD 231) (Tier 1) or a Larval Amphibian Growth and Development Assay (LAGDA) (Tier 2)) might be necessary. With regard to this the German CA takes note of the fact that two testing proposals (two generation reprotox study and prenatal development reprotoyx study) of the registrants are still pending.

As indicated above, regarding the ecotoxicological properties of TBBPA-DBPE further data are necessary to conclude on the bioaccumulation potential of the substance. Since TBBPA-DBPE is a highly lipophilic compound the standard assays used to assess BCF values might not be valid in this case and data from other assays *(e.g.* a feeding study) are needed to conclude on the vB parameter of the substance.

5.5 Potential follow-up and link to risk management

☐ Harmonised C&L	☒ Restriction	☒ Authorisation	☒ Other (provide further details)
If the ED-concern is substantiated during the substance evaluation process a SVHC-identification according to art. 57 e and f might be proposed and an analysis of risk management options would be undertaken to identify the most adequate regulatory action. This analysis includes restriction measures as well as the authorization process.			

References:

Hamers T, Kamstra JH, Sonneveld E, Murk AJ, Kester MH, Andersson PL, Legler J, Brouwer A. (2006): In vitro profiling of the endocrine-disrupting potency of brominated flame retardants. *Toxicol Sci,* **92**(1):157-173.