

Committee for Risk Assessment
RAC

Opinion

proposing harmonised classification and labelling
at EU level of

**tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-
triyliimino)tribenzoate**

EC Number: 402-070-1
CAS Number: 88122-99-0

CLH-O-0000001412-86-129/F

Adopted

9 December 2016

OPINION OF THE COMMITTEE FOR RISK ASSESSMENT ON A DOSSIER PROPOSING HARMONISED CLASSIFICATION AND LABELLING AT EU LEVEL

In accordance with Article 37 (4) of Regulation (EC) No 1272/2008, the Classification, Labelling and Packaging (CLP) Regulation, the Committee for Risk Assessment (RAC) has adopted an opinion on the proposal for harmonised classification and labelling (CLH) of:

Chemical name: **tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate**

EC Number: **402-070-1**

CAS Number: **88122-99-0**

The proposal was submitted by **Germany** and received by RAC on **27 January 2016**.

In this opinion, all classification and labelling elements are given in accordance with the CLP Regulation.

PROCESS FOR ADOPTION OF THE OPINION

Germany has submitted a CLH dossier containing a proposal together with the justification and background information documented in a CLH report. The CLH report was made publicly available in accordance with the requirements of the CLP Regulation at <http://echa.europa.eu/harmonised-classification-and-labelling-consultation/> on **29 February 2016**. Concerned parties and Member State Competent Authorities (MSCA) were invited to submit comments and contributions by **14 April 2016**.

ADOPTION OF THE OPINION OF RAC

Rapporteur, appointed by RAC: **Pietro Paris**

The opinion takes into account the comments provided by MSCAs and concerned parties in accordance with Article 37(4) of the CLP Regulation and the comments received are compiled in Annex 2.

The RAC opinion on the proposed harmonised classification and labelling was adopted on **9 December 2016** by **consensus**.

Classification and labelling in accordance with the CLP Regulation (Regulation (EC) 1272/2008)

	Index No	International Chemical Identification	EC No	CAS No	Classification		Labelling			Specific Conc. Limits, M-factors	Notes
					Hazard Class and Category Code(s)	Hazard statement Code(s)	Pictogram, Signal Word Code(s)	Hazard statement Code(s)	Suppl. Hazard statement Code(s)		
Current Annex VI entry	607-414-00-6	tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate	402-070-1	88122-99-0	Aquatic Chronic 4	H413		H413			
Dossier submitters proposal	607-414-00-6	tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate	402-070-1	88122-99-0	Remove Aquatic Chronic 4	Remove H413		Remove H413			
RAC opinion	607-414-00-6	tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate	402-070-1	88122-99-0	Remove Aquatic Chronic 4	Remove H413		Remove H413			
Resulting Annex VI entry if agreed by COM	607-414-00-6	tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate	402-070-1	88122-99-0	The existing entry should be removed from Annex VI of CLP						

FOUNDATIONS FOR ADOPTION OF THE OPINION

ENVIRONMENTAL HAZARD EVALUATION

RAC evaluation of aquatic hazards (acute and chronic)

Summary of the Dossier Submitter's proposal

According to the Annex VI of the CLP Regulation (EC) No 1272/2008 Annex VI, the substance tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate meets the criteria for classification with Aquatic Chronic 4, i.e. it may cause long-lasting harmful effects to aquatic life. According to the CLP report, the dossier submitter (DS) informed that this is based on "the high log K_{ow} value (>3) and the resulting bioaccumulation potential of the substance, in the absence of chronic aquatic toxicity data on all three trophic levels (algae, daphnia, fish)".

The DS indicated that new experimental data show that there is low potential for bioaccumulation due to a BCF value of 77 and that there is no apparent chronic toxicity to aquatic organisms up to the limit of water solubility. Therefore, classification of the substance with Aquatic Chronic 4 is no longer justified, as established by one of the classification criteria for Aquatic Chronic 4 ("have an experimentally determined BCF \geq 500 (or, if absent, a log K_{ow} \geq 4)").

Degradation

One guideline study investigating the ready biodegradability of tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate is available. The biodegradation of the substance was tested according to OECD Guideline 301F (Manometric Respirometry Test), using domestic activated sludge as inoculum. After 28 days the test substance was degraded by 0%. Thus, tris(2-ethylhexyl)-4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino) tribenzoate is not readily biodegradable according to OECD criteria.

Bioaccumulation

A bioconcentration test according to OECD Guideline 305 (Bioconcentration: Flow-through Fish Test) was conducted with ^{14}C -radiolabelled tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate in *Danio rerio*. The fish were exposed to the test concentrations 0.02 and 0.10 $\mu\text{g/L}$ in a flow-through-system. As the solubility of the test substance in water is very low (< 0.2 $\mu\text{g/L}$ under test conditions) and as in preliminary tests it was not possible to achieve a constant test concentration without the use of a solvent, the two test concentrations were prepared by adding dimethylformamide (DMF; 0.02 mL/L) to the test substance.

In order to check the stability of the test concentration over the course of the study, the radioactivity in the water samples was measured by disintegration counting in a liquid scintillation counter. The calculation of the mean measured concentration in water was based on the filtrated samples to exclude that undissolved test substance contributes to the concentration values in water used for the BCF calculation. The mean measured concentrations were kept constant within the range of +/- 20% of the nominal concentration. A lipid determination was conducted at each fish sampling. The lipid content in fish which relates to the whole body weight has been found to be in a normal range between 3.9 and 6.5% over the whole uptake and elimination period.

The uptake period of the test substance in fish lasted 28 days. No increase of the concentration in fish was observed after study day 7 in either the low or the high concentration. The beginning of steady state was therefore considered to be reached within 7 days. The depuration period in uncontaminated dilution water lasted 16 days. The elimination of the test substance was rapid with a half-life time of 0.52 days for the low and 1.6 days for the high concentration group, which indicates very fast depuration of the test substance from the organism.

Based on the concentration of the test substance in fish during steady state the BCF_{ss} was 93 in the lower concentration group (0.02 µg/L) and 58 in the higher concentration group (0.10 µg/L). The mean value was 76. Based on kinetic rate constants the bioconcentration factor was found to be in the same range as during steady state: BCF_k of 99 in the lower concentration group and BCF_k of 54 in the higher concentration group. The mean value was 77.

The lipid content of the test fish was not used for further calculations of the BCF based on lipid content. Since the variability in the lipid content is high and it was technically not possible to determine the lipid content and the concentration of the test substance in the same fish, a true adjustment to the lipid content was not possible. Further, only slight changes of the mean lipid content of the control fish were observed over time.

In conclusion, the bioconcentration factor in whole fish derived from this study based on the mean of BCF_{ss} and BCF_k is considered to be 77. Thus, a significant bioaccumulation of tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate in organisms is not to be expected.

Aquatic Toxicity

The ecotoxicological tests results from available acute and chronic studies of tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate for all trophic levels are summarised in the following table.

Test organism / guideline, test method	Short-term result (endpoint)	Long-term result (endpoint)	Reference
Toxicity to fish			
Zebrafish (<i>Brachydanio rerio</i>) / OECD TG 203, GLP, static	LC50 (96h) >1000 mg/L (nominal)	-	BASF AG (1987c)
Zebrafish (<i>Danio rerio</i>) / OECD TG 210, GLP, flow-through	-	NOEC (35d) ≥ 1.01 µg/L (meas. (initial))	BASF AG (2007c)
Toxicity to aquatic invertebrates			
<i>Daphnia magna</i> / OECD TG 202, GLP, static	EC50 (48h) > 500 mg/L (nominal)	-	BASF AG (1986d)
<i>Daphnia magna</i> / OECD TG 202, GLP, static	EC50 (48h) > 500 mg/L (nominal)	-	BASF AG (1986e)
<i>Daphnia magna</i> / OECD TG 211, GLP, flow-through	-	NOEC (21d) ≥ 1 µg/L (nominal) ≥ 1.08 µg/L (meas.) no effects observed	BASF AG (2007b)

Toxicity to algae			
<i>Scenedesmus subspicatus</i> / EEC Directive 79/831/EEC, Annex V, Part C, GLP, static	ErC50 (72h) > 80 mg/L (nominal)	NOE _C (72h) ≥ 80 mg/L (nominal) no effects observed	BASF AG (1995)

As shown in the table above, short- and long-term toxicity guideline studies indicate that tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriazimino)tribenzoate does not reveal acute nor chronic toxicity effects to aquatic organisms (algae, daphnia and fish) at concentrations up to the water solubility limit (the substance has been shown to be poorly water soluble, <1 µg/L).

In the long-term fish toxicity study a toxic effect was seen at the mean measured concentration of 2.72 µg/L (LOEC), when undissolved test substance was still present. The test concentration was above the limit of solubility of the test substance in water. Therefore, the effect observed cannot be related to the dissolved test substance alone but may be caused by the undissolved fraction.

In the long-term invertebrate toxicity test, daphnia was exposed to the single test concentration of 1 µg/L and no effect was observed.

In the algae toxicity test, the algae were exposed to a range of concentrations and no effect was observed at the highest concentration tested.

In conclusion, these results indicate no adverse effects of tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriazimino)tribenzoate in the environment.

Comments received during public consultation

Three Member State Competent Authorities (MSCAs) submitted comments on the DS's proposal. Two of them supported the proposed removal of Aquatic Chronic 4 and the substance subsequently having no classification.

However, one MSCA asked to clarify some minor issues about the bioaccumulation study:

- if a correction factor which takes into account the growth of the fish was applied;
- the way the lipid determination was conducted.

The DS replied to both questions stating that the growth of the fish was negligible, consequently a correction for growth dilution will have no influence on the results. Moreover, the DS presented a table with lipid content during the uptake and depuration phases for each sampling time, showing only slight further changes of the mean lipid content of the control fish were observed over time.

Another commentator did not support the proposed removal, noting that a valid long-term fish study with *Danio rerio* (BASF AG, 2007c) was presented in the dossier where an overall NOEC of 1.01 µg/l was determined. This result was very close to water solubility limit which, they argued, gives some grounds for concern and therefore classification as Aquatic Chronic 4 is still warranted. The DS replied that, as the limit of water solubility was stated as < 1 µg/L, the no observed effect concentration in the *Danio rerio* study (BASF AG, 2007c) of greater or equal 1.01 µg/L (initial measured) was in good correlation with this limit value. As there was no observed effect up to the limit of water solubility, there was no grounds for concern as regards the ecotoxicity of the substance. Therefore, the Aquatic Chronic 4 classification is not appropriate.

Assessment and comparison with the classification criteria

Tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate has been shown to be poorly water soluble (<1 µg/L) and not rapidly degradable. A bioaccumulation study (TG OECD 305: BCF = 77) revealed that tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate has a low potential for bioaccumulation. Moreover, short- and long-term toxicity guideline studies have shown that tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate does not reveal acute or chronic toxicity effects to aquatic organisms (algae, daphnia and fish) at concentrations up to the water solubility limit. These results indicate no adverse effects of tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate in the environment.

RAC agrees with the conclusion that the substance possesses a low potential for bioaccumulation to aquatic organisms.

According to Table 4.1.0 of Regulation (EC) No 1272/2008, a substance should be classified as Category Chronic 4 when it exhibits no chronic toxicity up to the limit of water solubility **and** it is not rapidly degradable **and** has an experimentally determined BCF ≥ 500 (or, if absent, a Log $K_{ow} \geq 4$). As the latter is clearly not the case, tris(2-ethylhexyl) 4,4',4''-(1,3,5-triazine-2,4,6-triyltriimino)tribenzoate should no longer be classified as Aquatic Chronic 4. RAC agrees with **no classification for chronic aquatic toxicity**.

ANNEXES:

- Annex 1 The Background Document (BD) gives the detailed scientific grounds for the opinion. The BD is based on the CLH report prepared by the Dossier Submitter; the evaluation performed by RAC is contained in 'RAC boxes'.
- Annex 2 Comments received on the CLH report, response to comments provided by the Dossier Submitter and RAC (excluding confidential information).