~~Confidential~~

Helsinki, 02 February 2022

Addressees
Registrants of JS_5809-08-5 as listed in the last Appendix of this decision

Date of submission of the dossier subject to this decision
08/10/2018

Registered substance subject to this decision ("the Substance")
Substance name: 1,1,3,3-tetramethylbutyl hydroperoxide
EC number: 227-369-2
CAS number: 5809-08-5

Decision number: Please refer to the REACH-IT message which delivered this communication (in format CCH-D-XXXXXXXXXX-XX-XX/F)

DECISION ON A COMPLIANCE CHECK

Under Article 41 of Regulation (EC) No 1907/2006 (REACH), you must submit the information listed below, by the deadline of ***7 November 2023***.

Requested information must be generated using the Substance unless otherwise specified.

A. Information required from all the Registrants subject to Annex VII of REACH

1. In vitro gene mutation study in bacteria (Annex VII, Section 8.4.1.; test method: EU B.13/14. / OECD TG 471)

B. Information required from all the Registrants subject to Annex VIII of REACH

1. In vitro cytogenicity study in mammalian cells (Annex VIII, Section 8.4.2.; test method: OECD TG 473) or In vitro micronucleus study (Annex VIII, Section 8.4.2.; test method: OECD TG 487)

2. Short-term toxicity testing on fish (Annex VIII, Section 9.1.6.; test method: OECD TG 203)

3. Simulation testing on ultimate degradation in surface water also requested below (triggered by Annex VIII, Section 9.2.)

4. Identification of degradation products also requested below (triggered by Annex VIII, Section 9.2.)

C. Information required from all the Registrants subject to Annex IX of REACH

1. Long-term toxicity testing on fish (Annex IX, Section 9.1.6.; test method: OECD TG 210)

2. Simulation testing on ultimate degradation in surface water (Annex IX, Section 9.2.1.2.; test method: EU C.25./OECD TG 309) at a temperature of 12°C. Non-extractable residues (NER) must be quantified and a scientific justification of the selected extraction procedures and solvents must be provided.

3. Identification of degradation products (Annex IX, 9.2.3.; test method: using an appropriate test method)

Reasons for the request(s) are explained in the appendices entitled "Reasons to request information required under Annexes VII to IX of REACH", respectively.

Information required depends on your tonnage band

You must provide the information listed above for all REACH Annexes applicable to you, and in accordance with Articles 10(a) and 12(1) of REACH:

- the information specified in Annexes VII and VIII to REACH, for registration at 10-100 tpa;
- the information specified in Annexes VII, VIII and IX to REACH, for registration at 100-1000 tpa.

You are only required to share the costs of information that you must submit to fulfil your information requirements.

For certain endpoints, ECHA requests the same study from registrants at different tonnages. In such cases, only the reasoning why the information is required at lower tonnages is provided in the corresponding Appendices. For the tonnage where the study is a standard information requirement, the full reasoning for the request including study design is given. Only one study is to be conducted; the registrants concerned must make every effort to reach an agreement as to who is to carry out the study on behalf of the other registrants under Article 53 of REACH.

How to comply with your information requirements

To comply with your information requirements you must submit the information requested by this decision in an updated registration dossier by the deadline indicated above. You must also update the chemical safety report, where relevant, including any changes to classification and labelling, based on the newly generated information.

You must follow the general testing and reporting requirements provided under the Appendix entitled "Requirements to fulfil when conducting and reporting new tests for REACH purposes". In addition, you should follow the general recommendations provided under the Appendix entitled "General recommendations when conducting and reporting new tests for REACH purposes". For references used in this decision, please consult the Appendix entitled "List of references".

Appeal

This decision, when adopted under Article 51 of REACH, may be appealed to the Board of Appeal of ECHA within three months of its notification to you. Please refer to http://echa.europa.eu/regulations/appeals for further information.

Failure to comply

If you do not comply with the information required by this decision by the deadline indicated above, ECHA will notify the enforcement authorities of your Member State.

Authorised[1] under the authority of Mike Rasenberg, Director of Hazard Assessment

[1] 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 A: Reasons to request information required under Annex VII of REACH

1. In vitro gene mutation study in bacteria

An *in vitro* gene mutation study in bacteria is an information requirement under Annex VII to REACH (Section 8.4.1.).

Studies provided

You have provided a key study in your dossier:

i. Bacterial reverse mutation test (which was performed by a similar method to the OECD TG 471, pre-GLP, 1977) with the following strains S. typhimurium TA 98, TA 100, TA 1535, TA 1537, and TA 1538 which all gave negative results.

We have assessed this information and identified the following issue(s):

To fulfil the information requirement, the study has to meet the requirements of OECD TG 471[2] (1997). Two of the key parameters of this test guideline include:

a) The test must be performed with 5 strains: four strains of *S. typhimurium* (TA98; TA100; TA1535; TA1537 or TA97a or TA97) and one strain which is either *S. typhimurium* TA102 or *E. coli* WP2 uvrA or *E. coli* WP2 uvrA (pKM101).
b) One positive control must be included in the study. The positive control substance must produce a statistically significant increase in the number of revertant colonies per plate compared with the concurrent negative control.

The reported data for the study you have provided did not include results for the required fifth strain, *S.typhimurium* TA 102 or *E.coli* WP2 uvrA or *E.coli* WP2 uvrA (Pkm101). No information was provided whether the positive control produced a statistically significant increase in the number of revertant colonies per plate compared with the concurrent negative control. In addition, some values with the TA 100 strain followed an increasing trend in experiment 2 with and without S9.

The information provided does not cover two of the key parameters required by OECD TG 471

Therefore, the information requirement is not fulfilled.

In the comments to the draft decision, you agree to perform the requested study.

Study design

To fulfil the information requirement for the Substance, the *in vitro* gene mutation study in bacteria (OECD TG 471) is considered suitable.

[2] ECHA Guidance R.7a, Table R.7.7–2, p.557

Appendix B: Reasons to request information required under Annex VIII of REACH

1. In vitro cytogenicity study in mammalian cells or In vitro micronucleus study

An *in vitro* cytogenicity study in mammalian cells or an *in vitro* micronucleus study is an information requirement under Annex VIII to REACH (Section 8.4.2.).

You have provided a key study in your dossier:

1. In Vitro Mammalian Cell Micronucleus Test (OECD Guideline 487, GLP, 2013).

We have assessed this information and identified the following issue(s):

To fulfil the information requirement, a study must be an *in vitro* chromosomal aberration test or an *in vitro* micronucleus test, conducted in mammalian cells and comply with the OECD TG 473 or OECD TG 487 (Article 13(3) of REACH and ECHA Guidance R.7, Table R.7.7-2).

The information provided is not an *in vitro* cytogenicity study in mammalian cells nor an *in vitro* micronucleus study. In the dossier under this endpoint the first half of the data appear to be from an *in vitro* cytogenicity study in mammalian cells, however the second half of the data, including the study results, are from an *in vitro* gene mutation study in mammalian cells, as evidenced by the reference to the ability to induce mutations in the mouse lymphoma thymidine kinase locus assay. Therefore, the information provided does not cover the key parameter(s) required by OECD TG 473/487.

Therefore, the information requirement is not fulfilled.

In your comments to the draft decision, you submitted an *In Vitro* Mammalian Cell Micronucleus Test, supported by a Robust Study Summary. ECHA has assessed the information against the requirement in OECD TG 487. The information you have provided in your comments addresses the incompliances identified in this decision for this information requirement. However, as the information is currently not available in your registration dossier, the data gap remains. You should therefore submit this information in an updated registration dossier by the deadline set out in the decision.

Study design

To fulfil the information requirement for the Substance, either *in vitro* cytogenicity study in mammalian cells (Annex VIII, Section 8.4.2., test method OECD TG 473) or *in vitro* micronucleus study (Annex VIII, Section 8.4.2., test method OECD TG 487) are considered suitable.

2. Short-term toxicity testing on fish

Short-term toxicity testing on fish is an information requirement under Annex VIII to REACH (Section 9.1.3.).

You have adapted this information requirement according to Annex XI, Section 1.2. of REACH (weight of evidence).

In support of your adaptation, you have provided the following sources of information in the dossier:

i. An experimental study ([redacted]. 1989) according to guideline equivalent or similar to OECD TG 203, using an analogue substance tert-butyl hydroperoxide, EC

200-915-7;

ii. An experimental study ([redacted] 2015) according to guidance OECD TG 236, performed on the Substance;

iii. (Q)SAR prediction 2 with "Defined endpoint": Fish-LC50 (ECOSAR v1.11) using an analogue substance tert-butyl hydroperoxide, EC 200-915-7;

iv. (Q)SAR prediction 2 with "Defined endpoint": Fish-LC50 (ECOSAR v1.11) on the Substance.

In your comments to the draft decision you have provided an additional source of information:

v. An experimental study ([redacted]. 1992) according to guideline OECD TG 203, using an analogue substance tert-butyl hydroperoxide, EC 200-915-7.

We have assessed this information and identified the following issues:

Annex XI, Section 1.2 states that there may be sufficient weight of evidence from several independent sources of information leading to assumption/conclusion that a substance has or has not a particular dangerous (hazardous) property, while information from a single source alone is insufficient to support this notion.

According to ECHA Guidance R.4, a weight of evidence adaptation involves an assessment of the relative values/weights of the different sources of information submitted. The weight given is based on the reliability of the data, consistency of results/data, nature and severity of effects, and relevance and coverage of the information for the given regulatory information requirement. Subsequently, relevance, reliability, coverage, consistency and results of these sources of information must be balanced in order to decide whether they together provide sufficient weight to conclude that the Substance has or has not the (dangerous) property investigated by the required study.

Annex XI, section 1.2 requires that adequate and reliable documentation is provided to describe your weight of evidence adaptation.

You have not included a justification for your weight of evidence adaptation, which would include an adequate and reliable (concise) documentation as to why the sources of information provide sufficient weight to conclude that the Substance has or has not the dangerous property investigated by the required study.

Irrespective of the above mentioned deficiencies on the documentation, which in itself could lead to the rejection of the adaptation, ECHA has assessed the provided sources of information.

Relevant information that can be used to support weight of evidence adaptation for information requirement of Section 9.1.3 at Annex VIII includes similar information that is produced by the OECD TG 203. i.e. the concentration of the test material leading to the mortality of 50% of the juvenile fish at the end of the test is estimated.

The source of information (ii) does not inform on mortality of juvenile fish as required in OECD TG 203 since it investigates mortality of fish embryos. Therefore, in this respect it does not provide sufficient relevant information that would contribute to the conclusion on this key investigation (see Analysis of the relevance and adequateness of using Fish Embryo Acute Toxicity (FET) Test Guidance (OECD 236) to fulfil the information requirements and addressing concerns under REACH) [3].

[3] https://echa.europa.eu/documents/10162/13639/fet_report_en.pdf/b6036bdb-9041-41c8-a390-d9b66b244a4b

The sources of information (i), (iii) and (iv) provide relevant information on mortality of juvenile fish. However, the reliability of these sources of information is significantly affected for the following reasons:

I. Reliability of source of information "i"

ECHA understands that you intend to predict the (eco)toxicological properties of the Substance for this endpoint, from data obtained with analogue substance in a read-across approach as part of your weight of evidence adaptation.

Annex XI, Section 1.5. specifies two conditions which must be fulfilled whenever a read-across approach is used. Firstly, there needs to be structural similarity between substances which results in a likelihood that the substances have similar physicochemical, toxicological and ecotoxicological properties so that the substances may be considered as a group or category. Secondly, it is required that the relevant properties of a substance within the group may be predicted from data for reference substance(s) within the group (addressed under 'Assessment of prediction(s)').

Additional information on what is necessary when justifying a read-across approach can be found in the ECHA Guidance R.6. and related documents[4,5].

You have provided a read-across justification document in IUCLID Section 13.2.

You predict the properties of the Substance from the structurally similar substance, 1,1,3,3-tetramethylbutyl hydroperoxide, EC No. 200-915-7 (i.e. the source substance).

You have provided the following reasoning for the prediction of aquatic toxicity: the Substance and the source substance have similar chemical structures, physico-chemical properties and ecotoxicological properties.

ECHA understands that you predict the properties of the Substance using a read-across hypothesis which assumes that different compounds have the same type of effects. The properties of your Substance are predicted to be quantitatively equal to those of the source substance.

ECHA notes the following shortcomings with regards to prediction(s) of aquatic toxicity.

Supporting information

Annex XI, Section 1.5 of the REACH Regulation states that "*physicochemical properties, human health effects and environmental effects or environmental fate may be predicted from data for reference substance(s)*". For this purpose "*it is important to provide supporting information to strengthen the rationale for the read-across*" (Guidance on IRs and CSA R.6, Section R.6.2.2.1.f.). The set of supporting information should allow to verify the crucial aspects of the read-across hypothesis and establish that the properties of the Substance can be predicted from the data on the source substance(s).

Supporting information must include supporting information / bridging studies to compare properties of the Substance and source substances.

As indicated above, your read-across hypothesis is based on the assumption that the structurally similar substances cause the same type of effect(s). In this context, relevant,

[4] Read-across assessment framework (RAAF, March 2017)
[5] RAAF - considerations on multiconstituent substances and UVCBs (RAAF UVCB, March 2017)

reliable and adequate information allowing to compare the properties of the Substance and of the source substance(s) is necessary to confirm that both substances cause the same type of effects. Such information can be obtained, for example, from bridging studies of comparable design and duration for the Substance and of the source substance(s).

In your justification document you have provided a table (i.e. table 6) containing supporting information including two fish studies:

- A FET study i.e. OECD TG 236 conducted with the Substance, indicated a LC50 = 11.3 mg/L.
- An OECD TG 203 conducted with the source substance, indicated a LC50 = 56.9 mg/L.

In your comments to the draft decision you have provided the following additional information:

- An OECD TG 203 conducted with the source substance, indicated a LC50 = 29.61 mg/L.

In addition, you have also reported supporting information on "Acute toxicity to Daphnia" and "Toxicity to algae" for both substances (i.e. on the Substance and the source substance) indicating the following:

- For acute toxicity to Daphnia, you have reported an EC50 = 6.7 mg/L and 14.07 mg/L of the Substance and the source substance, respectively,
- For toxicity to Algae, you have reported an ErC50 = 5.6 mg/L and ErC10 = 2.8 mg/L of the Substance, ErC50 = 1.47 mg/L and NOEC = 0.22 mg/L of the source substance

You conclude that the read-across is justified since (i) the FET study performed with the Substance (used as supporting evidence) shows results in the same order of magnitude as with the source study performed with the source substance. And (ii), both substances (i.e. the Substance and the source substance) have similar toxicity to Daphnia and Algae.

Regarding the FET study (i.e. OECD 236) performed with the Substance, for the reasons already explained above the study is not considered as relevant bridging information because as different life stages are investigated direct comparison of the results is not possible.

Regarding the OECD TG 203 study performed on the source substance the reasons why this study cannot be considered reliable are explained further below *"Reliability of study on the source substance*". Thus the data set reported in the technical dossier does not include relevant, reliable and adequate information for the Substance and of the source substance to support your read-across hypothesis.

Furthermore, you have not provided any justification or evidence on how information on algae and daphnids organisms is relevant for the prediction of mortality effects observed on fish organisms (e.g. mechanisms of toxicity).

In the absence of such information, you have not established that the Substance and the source substance(s) are likely to have similar properties. Therefore you have not provided sufficient supporting information to strengthen the rationale for the read-across.

Reliability of study on the source substance

Under Annex XI, Section 1.5., the results to be read across must have an adequate and reliable coverage of the key parameters addressed in the corresponding test method referred to in Article 13(3), in this case OECD TG 203. Therefore, the following specifications must be met:

- the analytical measurement of test concentrations is conducted;

Your registration dossier provides an OECD TG 203 study with the source substance (study i.) in which no analytical measurement of test concentrations was conducted. On this basis the validity criteria are not fulfilled.

Therefore, study (i) submitted in your adaptation does not provide an adequate and reliable coverage of the key parameter(s) of the corresponding OECD TG.

In the comments to the draft decision, you have provided an additional study with the source substance (study v.), supported by a Robust Study Summary (RSS). ECHA has assessed the information against the requirement in OECD TG 203. The RSS includes the information listed above as missing in the dossier. The information provided as part of your comments addresses the issue identified above regarding *"Reliability of study on the source substance"*. However, as the information is currently not available in your registration dossier, this issue remains. You should submit this information in an updated registration dossier by the deadline set in the decision.

Conclusions on the read-across approach

As explained above, you have not established that relevant properties of the Substance can be predicted from data on the source substance. Therefore, the information from the source substance provided as part of your weight of evidence adaptation is not considered reliable.

II. Reliability of the sources of information *"iii" and "iv"*

Under Annex XI, Section 1.3., the following conditions must be fulfilled whenever a (Q)SAR approach is used:

1. the substance must fall within the applicability domain of the model,
2. adequate and reliable documentation of the method must be provided.

With regard to these conditions, we have identified the following issue(s):

Lack of documentation of the prediction (QPRF)

With regard to condition 2: ECHA Guidance R.6.1.6.3 states that the information specified in or equivalent to the (Q)SAR Prediction Reporting Format document (QPRF) must be provided to have adequate and reliable documentation of the applied method. For a QPRF this includes, among others:

- the relationship between the modelled substance and the defined applicability domain,
- the identities of close analogues, including considerations on how predicted and experimental data for analogues support the prediction.

You have not provided information about the prediction in the form of a QPRF including the information listed above on the applicability domain and on close analogues.

In absence of such information, ECHA cannot establish the reliability of the prediction.

Despite this deficiency on the documentation, which in itself could lead to the rejection of the QSAR prediction, since the model is publicly available, ECHA has assessed the provided QSAR prediction and identified the following deficiency:

The substance is outside the applicability domain of the model.

With regard to condition 1: Under ECHA Guidance R.6.1.5.3., a substance must fall within the applicability domain specified by the model developer.

You have provided ECOSAR v.1.11 neutral organic class model predictions for the Substance and for the source substance to predict the effect value (i.e. LC50) for short term fish toxicity.

According to ECOSAR v1.11 documentation, the prediction for the Substance and the source substance is out of mechanistic domain of the model. ECOSAR recognises the Substance and the source substance as part of the "peroxy acid" class but does not have any model to predict properties of peroxy acids. The value included in the dossier is derived from the model for neutral organic substances, but both substances (i.e. Substance and source substance) do not fall under this class definition. Therefore, you have not demonstrated that the Substance and the source substance fall within the applicability domain of the model.

Conclusion on the weight of evidence adaptation

Accordingly, it is not possible to conclude, based on any source of information alone or considered together, whether your Substance has or has not the particular dangerous properties forseen to be investigated in an OECD TG 203 study. Therefore, your adaptation is rejected and the information requirement is not fulfilled.

In the comments to the draft decision, you propose the following: Instead of performing a new OECD TG 203 study as requested, you propose to perform the long-term toxicity study on fish (OECD TG 210) requested in Appendix C. Section 1. You consider that the range finding study from OECD TG 210 would meet the information requirement of Short-term toxicity on fish.

REACH Annex VII, section 9.1.1, column 2 specifies that the short-term toxicity study does not need to be conducted if a long-term aquatic toxicity study on fish is available. At present no long-term toxicity study on fish is provided in the IUCLID dossier, therefore no conclusion on the compliance can currently be made. Please note that this decision does not consider updates of the registration dossiers after the date on which you were notified of the draft decision according to Article 50(1) of REACH (see section 5.4. of ECHA's Practical Guide "How to act in Dossier Evaluation). You remain responsible for complying with this decision by the set deadline.

3. Simulation testing on ultimate degradation in surface water

Further degradation testing must be considered if the chemical safety assessment (CSA) according to Annex I indicates the need to investigate further the degradation of the substance (Annex VIII, Section 9.2., Column 2).

This information requirement is triggered in case the chemical safety assessment (CSA) indicates the need for further degradation investigation (Annex I, Section 4; Annex XIII, Section 2.1), such as if the substance is a potential PBT/vPvB substance (ECHA Guidance R.11.4.). This is the case if the Substance itself or any of its constituent or impurity present in concentration ≥ 0.1% (w/w) or relevant transformation/degradation product meets the following criteria:

- it is potentially persistent or very persistent (P/vP) as:
  - it is not readily biodegradable (*i.e.* <60% degradation in an OECD 301D), and
  - it shows <70% degradation (DOC or COD removal) within 7 days in an inherent biodegradation test OECD 302B and lag phase > 3 days;
- it is potentially bioaccumulative or very bioaccumulative (B/vB) as:
  - it has a high potential to partition to lipid storage (*e.g.* log K_{ow} > 4.5);
  - it has a high potential for bioaccumulation in air-breathing organisms (log K_{ow} >2 and log K_{oa} >5);
- it meets the T criteria set in Annex XIII: NOEC or EC_{10} < 0.01 mg/L or classification as carc. 1A or 1B, muta. 1A or 1B, repro. 1A, 1B or 2, or STOT RE 1 or 2.

Your registration dossier provides the following screening information on PBT/vPvB properties:

- The Substance is not readily biodegradable (0% degradation after 28 days in OECD TG 301D);
- The Substance shows ≥ 90% degradation (test material analysis) after 24h in OECD TG 302B. In your dossier you specified that the analysis of dissolved organic carbon (i.e. DOC) and chemical oxygen demand (i.e. COD) were not performed in this study, contrary to the OECD 302B requirements. Since the results are not determined based on DOC or COD removal, this study cannot be used to conclude on the inherent biodegradation properties of the Substance.
- The transformation/degradation product 1,1,3,3-tetramethylbutanol is not readily biodegradable since in your PBT/vPvB assessment (IUCLID Section 2.3) you report that it "*did not degrade in the prolonged Closed Bottle tests ([redacted], 2017)*."
- The Substance has a high potential for bioaccumulation in air-breathing organisms based on log Kow of 2.9 (OECD TG 107) and log Koa of 5.48 (in-house prediction with publicly available model Episuite EPIWIN 4.1);

Furthermore, in your PBT assessment in Section 2.3 of the registration dossier, you conclude that the Substance is not B/vB since LogKow is <4.5 based on Log Kow of 2.9 (OECD TG 117; [redacted] 2011).

The screening information above indicates that the Substance is a potential PBT/vPvB substance. Furthermore, we have assessed the information provided in your PBT assessment and identified the following issue:

PBT/vPvB properties of the impurities not addressed

In the context of the PBT/vPvB assessment (Annex I, Section 4) and the risk assessment (Annex I, Section 6) of the Substance, the CSA must address relevant constituents and transformation/degradation products (Annex XIII, 5th paragraph; ECHA Guidance R.11.4.1.).

Your B/vB assessment is solely based on the properties of the main constituent of the Substance (LogKow = 2.9) and it does not address the B/vB properties of all the relevant constituents/impurities present in concentration ≥ 0.1% (w/w) or relevant transformation/degradation products.

ECHA notes that under the "Composition" section of your dossier (i.e. IUCLID Section 1.2.) it is reported that the Substance contains five impurities with a concentration above 0.1%. ECHA has assessed the B/vB screening and P/vP screening properties of the 5 impurities using the public version of KOWIN and BIOWIN models in the QSAR Toolbox. The KOWIN model predictions showed that among the impurities reported in your dossier, two of them are screening as potentially B/vB:

- [redacted] (with a typical concentration of ca. [redacted]%), log Kow close to 4.5 (i.e. 3-4.5) and potentially B/B (air-breathing organisms) since log Kow > 2 and log Koa > 5;
- [redacted] with a typical concentration of ca. [redacted]%), potentially B/vB since high potential to partition to lipid storage based on log Kow > 4.5 (i.e. 8.2) and high potential for bioaccumulation in air-breathing organisms based on logKow > 2 and log Koa > 5.

Furthermore, the BIOWIN model predictions showed that both impurities listed above also screen as potentially P/vP.

In addition to the above, the information about (eco)toxicity in your dossier is currently incompliant and therefore it is not possible to conclude on the toxicity of the Substance see Appendices B.2 and C.1 of this decision).

The information above indicates that the Substance is a potential PBT/vPvB substance.

Therefore, the chemical safety assessment (CSA) indicates the need for further degradation investigation.

The examination of the available information or adaptations, as well as the selection of the requested test and the test design are addressed respectively in Appendix C.2.

In the comments to the draft decision, you agree to perform the requested study under environmentally relevant conditions.

You have also added further comments regarding the available OECD TG 302B study. You indicate that the study was performed to show a primary degradation of the Substance. ECHA acknowledges your comments, however, as you also recognised in your comments the study did not show an ultimate degradation according to the criteria set out in ECHA guidance R.11.4.1. (i.e. above 70% degradation DOC or COD removal within 7 days in an inherent biodegradation test OECD 302B and lag phase > 3 days). Therefore, further information are needed to conclude on the persistency (i.e.P/vP) properties of the Substance.

Regarding the PBT/vPvB properties of the impurities you propose to perform ready biodegradability studies on the pure form of these two impurities (i.e. 2-(1,1,3,3-tetramethyl-butylperoxy)-prop-2-yl-hydroperoxide and 2,2-bis(1,1,3,3-tetramethylbutylperoxy)propane-CAS No. 51319-21-2). ECHA acknowledges your comment.

4. Identification of degradation products

Further degradation testing must be considered if the chemical safety assessment (CSA) according to Annex I indicates the need to investigate further the degradation of the substance (Annex VIII, Section 9.2., Column 2).

As already explained under Section B.3 above, the Substance is a potential PBT/vPvB substance. Therefore, the chemical safety assessment (CSA) indicates the need for further degradation investigation.

The examination of the available information or adaptations, as well as the selection of the requested test and the test design are addressed respectively in Appendix C.3.

Appendix C: Reasons to request information required under Annex IX of REACH

1. Long-term toxicity testing on fish

Long-term toxicity testing on fish is an information requirement under Annex IX to REACH (Section 9.1.6.).

You have omitted this information and you provided the following justification: "*Due to fish being the least sensitive species by a factor of 10 for the algae endpoint and by a factor of 8.5 for the daphnia endpoint demonstrated by the existing acute test data, further chronic testing on fish is not considered required. In addition the chronic daphnia endpoint and subsequent updated environmental risk assessment has demonstrated safe use. Furthermore the supporting fish embryo toxicity test determined a NOEC of 10mg/L and is therefore also supportive of fish being the least sensitive species. Complete removal in the sewage treatment simulation test (99.2%) and rapid primary degradation in the Zahn Wellens Test (adapted with specific analysis) indicates that long term release to the wider environment is not expected and that further chronic testing is not required".*

We have assessed this information and identified the following issue:

A registrant may only adapt this information requirement based on the general rules set out in Annex XI. It is noted that Column 2 of Annex IX, Section 9.1, does not allow omitting the need to submit information on long-term toxicity to fish under Column 1 (Decision of the Board of Appeal in case A-011-2018).

Your justification to omit this information does not refer to any legal ground for adaptation under Annex XI to REACH.

Therefore, you have not demonstrated that this information can be omitted.

On this basis, the information requirement is not fulfilled.

In the comments to the draft decision, you agree to perform the requested study.

Study design

To fulfil the information requirement for the Substance, the Fish, Early-life Stage Toxicity Test (test method OECD TG 210) is the most appropriate (ECHA Guidance R.7.8.2.).

2. Simulation testing on ultimate degradation in surface water

Simulation testing on ultimate degradation in surface water is an information requirement under Annex IX to REACH (Section 9.2.1.2.).

You have provided an OECD TG 303A study.

We have assessed this information and identified the following issue:

To fulfil the information requirement and to allow concluding on the P/vP criteria, ultimate biodegradation simulation tests must simulate degradation under relevant environmental conditions, such as those found in surface water (Annex VIII, Section 9.2. and Annex XIII to REACH; ECHA Guidance R.11.4.).

Your registration dossier provides a simulation test in aerobic sewage treatment with activated sludge units (OECD TG 303A) study.

The SCAS test (i.e. OECD TG 303A) cannot be used for this endpoint since it does not simulate degradation under relevant environmental conditions. For this reason, it also cannot be used to conclude that a substance does not fulfil the criteria for P (ECHA Guidance R.11.4.1.1.).

On this basis, the information requirement is not fulfilled.

In the comments to the draft decision, you agree to perform the requested study.

Study design

Simulation degradation studies must include two types of investigations (ECHA Guidance R.7.9.4.1.):

1) a degradation pathway study where transformation/degradation products are quantified and, if relevant, are identified, and
2) a kinetic study where the degradation rate constants (and degradation half-lives) of the parent substance and of relevant transformation/degradation products are experimentally determined.

You must perform the test, by following the pelagic test option with natural surface water containing approximately 15 mg dw/L of suspended solids (acceptable concentration between 10 and 20 mg dw/L) (ECHA Guidance R.11.4.1.1.3.).

The required test temperature is 12°C, which corresponds to the average environmental temperature for the EU (ECHA Guidance R.16, Table R.16-8) and is in line with the applicable test conditions of the OECD TG 309.

As specified in ECHA Guidance R.7.9.4.1., the organic carbon (OC) concentration in surface water simulation tests is typically 2 to 3 orders of magnitude higher than the test substance concentration and the formation of non-extractable residues (NERs) may be significant in surface water tests. Therefore, non-extractable residues (NER) must be quantified. The reporting of results must include a scientific justification of the used extraction procedures and solvents. By default, total NER is regarded as non-degraded Substance. However, if reasonably justified and analytically demonstrated a certain part of NER may be differentiated and quantified as irreversibly bound or as degraded to biogenic NER, such fractions could be regarded as removed when calculating the degradation half-life(s) (ECHA Guidance R.11.4.1.1.3.). Further recommendations may be found in the background note on options to address non-extractable residues in regulatory persistence assessment available on the ECHA website.

Relevant transformation/degradation products are at least those detected at ≥ 10% of the applied dose at any sampling time or those that are continuously increasing during the study even if their concentrations do not exceed 10% of the applied dose, as this may indicate persistence (OECD TG 309; ECHA Guidance R.11.4.1.).

3. Identification of degradation products

Identification of degradation products is an information requirement under Annex IX to REACH (Section 9.2.3.).

You have provided the following information:

i. OECD TG 302B study, where 1,1,3,3-tetramethylbutanol is identified as degradation product of the Substance.

Furthermore, in your PBT/vPvB assessment, you conclude that this degradation product is P/vP.

We have assessed this information and identified the following issues:

A. To fulfil the information requirement, information on the identity of each relevant transformation/degradation products must be provided (Annex XIII, fifth paragraph; ECHA Guidance R.11.4.1.). For studies conducted according to OECD TGs 307/308/309, relevant transformation/degradation products that must be identified include:
   - those representing over 10% of the applied dose, and
   - those accumulating over time during the test.

   The same principles apply to studies other than simulation studies that are listed in Section 3.1 of REACH Annex XIII, such as OECD TG 302 tests (ECHA Guidance R.11.4.1.).

   You have provided a study based on OECD TG 302B investigating primary degradation of the Substance. In this study, degradation was 84-89% based on formation of 1,1,3,3-tetramethylbutanol, which is the only transformation/degradation product that was identified.

   No evidence is provided on whether other transformation/degradation products were formed that would correspond to over 10% of the applied dose and/or would accumulate over time during the test.

   This study does not comply with the requirements listed above as it does not provide information on the identity of all relevant transformation/degradation products.

B. Information on identity of relevant transformation/degradation products is required for the purpose of the PBT/vPvB assessment (Annex I, Section 4) and the risk assessment (Annex I, Section 6) of the Substance.

   In your PBT/vPvB assessment (IUCLID Section 2.3), you indicate that you consider the transformation/degradation product 1,1,3,3-tetramethylbutanol as P/vP since it "*did not degrade in the prolonged Closed Bottle tests ([redacted], 2017)*". This test is not provided in the dossier.

   Your conclusion that 1,1,3,3-tetramethylbutanol is P/vP based on the results of a Closed Bottle test is not supported, since results obtained from ready biodegradability tests are only regarded as screening information on P/vP properties (Annex XIII, Section 3.1.). In addition, no other information on the PBT/vPvB properties of 1,1,3,3-tetramethylbutanol is provided. Furthermore, as explained in point A. above, you have provided no information on other relevant transformation/degradation products.

   Based on the above, you have not provided information on the identity and PBT/vPvB properties of relevant transformation/degradation products for the Substance.

In the comments to the draft decision, you agree to investigate the degradation products. You indicate that you plan first to investigate them in the simulation study but you also plan to explore ways to address this information requirement. In addition of that, further in your comments you refer to an additional report ([redacted] 2017) in which you indicate that all the mechanisms behind the primary degradation are explained. However, in your comments you have not provided any new scientific information that could address the

information requirement. Therefore, the information provided in your comments does not change the assessment outcome.

On this basis, the information requirement is not fulfilled.

Study design

Regarding the selection of appropriate and suitable test method(s), the method(s) will have to be substance-specific. Identity, stability, behaviour, and molar quantity of the degradation/transformation products relative to the Substance must be evaluated and reported, when analytically possible. In addition, degradation half-life, log K_{ow} and potential toxicity of the transformation/degradation may need to be investigated. You may obtain this information from the degradation study requested in Appendix C.2. or by some other measure. If any other method is used for the identification of the transformation/degradation products, you must provide a scientifically valid justification for the chosen method.

If you use OECD TG 309 to determine the degradation rate of the Substance, the requested study according to OECD TG 309 (Appendix C.2.) must be conducted at 12°C and at a test concentration < 100 µg/L. However, to overcome potential analytical limitations with the identification and quantification of major transformation/degradation products, you may consider running a parallel test at higher temperature (but within the frame provided by the test guideline, *e.g.* 20°C) and at higher application rate (*i.e.* > 100 µg/L).

Appendix D: Requirements to fulfil when conducting and reporting new tests for REACH purposes

A. Test methods, GLP requirements and reporting

1. Under Article 13(3) of REACH, all new data generated as a result of this decision must be conducted according to the test methods laid down in a European Commission Regulation or to international test methods recognised by the Commission or ECHA as being appropriate.

2. Under Article 13(4) of REACH, ecotoxicological and toxicological tests and analyses must be carried out according to the GLP principles (Directive 2004/10/EC) or other international standards recognised by the Commission or ECHA.

3. Under Article 10(a)(vi) and (vii) of REACH, all new data generated as a result of this decision must be reported as study summaries, or as robust study summaries, if required under Annex I of REACH. See ECHA Practical Guide on How to report robust study summaries[6].

B. Test material

Before generating new data, you must agree within the joint submission on the chemical composition of the material to be tested (Test Material) which must be relevant for all the registrants of the Substance.

1. Selection of the Test material(s)

   The Test Material used to generate the new data must be selected taking into account the following:
   - the variation in compositions reported by all members of the joint submission,
   - the boundary composition(s) of the Substance,
   - the impact of each constituent/ impurity on the test results for the endpoint to be assessed. For example, if a constituent/ impurity of the Substance is known to have an impact on (eco)toxicity, the selected Test Material must contain that constituent/ impurity.

2. Information on the Test Material needed in the updated dossier
   - You must report the composition of the Test Material selected for each study, under the "Test material information" section, for each respective endpoint study record in IUCLID.
   - The reported composition must include all constituents of each Test Material and their concentration values and other parameters relevant for the property to be tested.

This information is needed to assess whether the Test Material is relevant for the Substance and whether it is suitable for use by all members of the joint submission.

Technical instructions on how to report the above is available in the manual on How to prepare registration and PPORD dossiers[7].

[6] https://echa.europa.eu/practical-guides
[7] https://echa.europa.eu/manuals

Appendix E: General recommendations when conducting and reporting new tests for REACH purposes

A. Strategy for the PBT/vPvB assessment

Under Annex XIII, the information must be based on data obtained under conditions relevant for the PBT/vPvB assessment. You must assess the PBT properties of each relevant constituent of the Substance present in concentrations at or above 0.1% (w/w) and of all relevant transformation/degradation products. Alternatively, you would have to justify why you consider these not relevant for the PBT/vPvB assessment.

You must revise your PBT assessment when the new information is available.

Appendix F: Procedure

This decision does not prevent ECHA from initiating further compliance checks at a later stage on the registrations present.

ECHA followed the procedure detailed in Articles 50 and 51 of REACH.

The compliance check was initiated on 1 February 2021.

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

ECHA took into account your comments and did not amend the request(s).

ECHA notified the draft decision to the competent authorities of the Member States for proposals for amendment.

As no amendments were proposed, ECHA adopted the decision under Article 51(3) of REACH.

Appendix G: List of references - ECHA Guidance[8] and other supporting documents

Evaluation of available information
Guidance on information requirements and chemical safety assessment, Chapter R.4 (version 1.1., December 2011), referred to as ECHA Guidance R.4 where relevant.

QSARs, read-across and grouping
Guidance on information requirements and chemical safety assessment, Chapter R.6 (version 1.0, May 2008), referred to as ECHA Guidance R.6 where relevant.

Read-across assessment framework (RAAF, March 2017)[9]

RAAF - considerations on multiconstituent substances and UVCBs (RAAF UVCB, March 2017)[10]

Physical-chemical properties
Guidance on information requirements and chemical safety assessment, Chapter R.7a (version 6.0, July 2017), referred to as ECHA Guidance R.7a in this decision.

Toxicology
Guidance on information requirements and chemical safety assessment, Chapter R.7a (version 6.0, July 2017), referred to as ECHA Guidance R.7a in this decision.

Guidance on information requirements and chemical safety assessment, Chapter R.7c (version 3.0, June 2017), referred to as ECHA Guidance R.7c in this decision.

Environmental toxicology and fate
Guidance on information requirements and chemical safety assessment, Chapter R.7a (version 6.0, July 2017), referred to as ECHA Guidance R.7a in this decision.

Guidance on information requirements and chemical safety assessment, Chapter R.7b (version 4.0, June 2017), referred to as ECHA Guidance R.7b in this decision.

Guidance on information requirements and chemical safety assessment, Chapter R.7c (version 3.0, June 2017), referred to as ECHA Guidance R.7c in this decision.

PBT assessment
Guidance on information requirements and chemical safety assessment, Chapter R.11 (version 3.0, June 2017), referred to as ECHA Guidance R.11 in this decision.

Guidance on information requirements and chemical safety assessment, Chapter R.16 (version 3.0, February 2016), referred to as ECHA Guidance R.16 in this decision.

Data sharing
Guidance on data-sharing (version 3.1, January 2017), referred to as ECHA Guidance on data sharing in this decision.

OECD Guidance documents[11]

[8] https://echa.europa.eu/guidance-documents/guidance-on-information-requirements-and-chemical-safety-assessment
[9] https://echa.europa.eu/support/registration/how-to-avoid-unnecessary-testing-on-animals/grouping-of-substances-and-read-across
[10] https://echa.europa.eu/documents/10162/13630/raaf_uvcb_report_en.pdf/3f79684d-07a5-e439-16c3-d2c8da96a316
[11] http://www.oecd.org/chemicalsafety/testing/series-testing-assessment-publications-number.htm

Guidance Document on aqueous–phase aquatic toxicity testing of difficult test chemicals – No 23, referred to as OECD GD 23.

Guidance document on transformation/dissolution of metals and metal compounds in aqueous media – No 29, referred to as OECD GD 29.

Guidance Document on Standardised Test Guidelines for Evaluating Chemicals for Endocrine Disruption – No 150, referred to as OECD GD 150.

Guidance Document supporting OECD test guideline 443 on the extended one-generation reproductive toxicity test – No 151, referred to as OECD GD 151.

Appendix H: Addressees of this decision and their corresponding information requirements

You must provide the information requested in this decision for all REACH Annexes applicable to you.

Registrant Name	Registration number	Highest REACH Annex applicable to you
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Where applicable, the name of a third party representative (TPR) may be displayed in the list of recipients whereas ECHA will send the decision to the actual registrant.