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Helsinki, 20 December 2018

Substance name: 1,4,5,6,7,7-hexachloro-8,9,10-trinorborn-5-ene-2,3-dicarboxylic anhydride, hereinafter referred as chlorendic anhydride
EC number: 204-077-3
CAS number: 115-27-5
Date of latest submission(s) considered[1]: 22 September 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 1,4,5,6,7,7-hexachloro-8,9,10-trinorborn-5-ene-2,3-dicarboxylic anhydride

DECISION ON SUBSTANCE EVALUATION

Based on Article 46(3) of the REACH Regulation (Regulation (EC) No 1907/2006), you are requested to submit the following information on the **degradation product 1,4,5,6,7,7,-hexachlorobicyclo[2,2,1]hept-5-ene- endo cis-2,3-dicarboxylic acid (herein after referred as chlorendic acid)** (EC no. 204-078-9; CAS no. 115-28-6) of the registered substance subject to the present decision:

1. **Combined *in vivo* mammalian erythrocyte micronucleus test in bone marrow with fluorescence *in situ* hybridisation (FISH) and *in vivo* mammalian comet assay on the following target tissues: liver, glandular stomach, duodenum, gonadal cells and, if technically feasible, pancreas; test methods EU B.12./OECD 474 and OECD 489 in male rats, oral route, using the degradation product chlorendic acid;** (as further specified in Appendix 1);

Based on Article 46(3) of the REACH Regulation (Regulation (EC) No 1907/2006), you are requested to submit the following information on the **registered substance 1,4,5,6,7,7-hexachloro-8,9,10-trinorborn-5-ene-2,3-dicarboxylic anhydride hereinafter referred as chlorendic anhydride**, (EC no. 204-077-3; CAS no. 115-27-5) subject to the present decision:

2. **Exposure assessment for the whole life-cycle and clarification of environmental release categories (ERC) for risk assessment:** detailed description of the life-cycle with identification of the substance(s) of interest (including chlorendic anhydride, its hydrolysis degradation product, chlorendic acid and any other relevant transformation/degradation product) along the whole life-cycle and exposure scenarios for the relevant steps. The choice of the exposure scenario must be justified (e.g. polymerisation properties of chlorendic anhydride leading to the choice of a specific ERC and revised release factors must be fully justified). If the parameters used for the environmental risk assessment are not the

[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.

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default value of the relevant ERC, a justification must be provided. Additional information is needed in case of identified risks to justify their proper management. If no relevant justification is provided, the evaluating MSCA will use conservative default values for the risk assessment.

You have to 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(s) by ***27 March 2020***. The deadline takes into account the time that you may need to agree on which of the registrant(s) will perform the required tests.

The reasons of this decision and any further test specifications are set out in Appendix 1. The procedural history is described in Appendix 2. Further information, observations and technical guidance as appropriate are provided in Appendix 3. Appendix 4 contains a list of registration numbers for the addressees of this decision. This appendix is confidential and not included in the public version of this decision.

Who performs the testing?

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

Appeal

This decision can be appealed to the Board of Appeal of ECHA within three months of its notification. An appeal, together with the grounds thereof, has to be submitted to ECHA in writing. An appeal has a 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.

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Appendix 1: Reasons

Based on the evaluation of all relevant information submitted on 1,4,5,6,7,7-hexachloro-8,9,10-trinorborn-5-ene-2,3-dicarboxylic anhydride (hereinafter referred as chlorendic anhydride) and its degradation product chlorendic acid and other relevant available information, ECHA concludes that further information is required to enable the evaluating Member State Competent Authority (MSCA) to complete the evaluation of whether the substance constitutes a risk to human health and the environment.

The evaluating MSCA will subsequently review the information submitted by you and evaluate if further information should be requested to clarify the concern for mutagenicity and exposure.

1. **Combined *in vivo* mammalian erythrocyte micronucleus test in bone marrow with fluorescence *in situ* hybridisation (FISH) and *in vivo* mammalian comet assay on the following target tissues: liver, glandular stomach, duodenum, gonadal cells and, if technically feasible, pancreas; test methods EU B.12./OECD 474 and OECD 489 in male rats, oral route, using the degradation product chlorendic acid;** (further referred as micronucleus test and comet assay, respectively)

The concern identified

Based on the positive results detailed below in the available *in vitro* mutagenicity studies and the effects seen in carcinogenicity studies there is a concern that the substance maybe a germ cells and somatic cells mutagen. Taking into account the high tonnage (100-10000 tons/year) of the substance this indicates a potential risk for workers in the formulation or re-packaging and polymerization of chlorendic anhydride during the manufacture of articles at industrial sites. Since available information does not allow a classification as germ cell mutagen Cat. 1 or 2 nor a proper no effect dose identification, a combined *in vivo* mammalian erythrocyte micronucleus test in bone marrow and *in vivo* mammalian comet assay using the degradation product chlorendic acid is needed to clarify the concern and for appropriate risk management.

Why new information is needed

In the first decision on substance evaluation for the registered substance, notified to you on 19 March 2015, ECHA requested you to submit, among other requests, an "*in vitro Mammalian Cell Micronucleus Test for the genotoxic potential assessment on the degradation product chlorendic acid (EC No 204-078-9 and CAS No 115-28-6). (Test method: OECD 487).*"

The test substance, chlorendic acid was examined for its potential to induce micronuclei in cultured binucleated human lymphocytes, in both the absence and presence of a metabolic activation system (S9-mix). The results showed, under the conditions used in this study that the test substance, chlorendic acid, is **clastogenic and/or aneugenic** to cultured human lymphocytes. You support this conclusion and also state that *in vivo* results have to be requested to conclude on the need to classify the substance as a mutagen.

The available existing data regarding the genotoxic potential of chlorendic anhydride and chlorendic acid in bacterial and mammalian cells were reviewed including the results of the previously requested micronucleus test on chlorendic acid. The data are presented below:

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Genotoxicity tests	Chlorendic anhydride	Chlorendic acid
***In vitro* Ames Bacterial Reverse Mutation Assay (OECD 471)**	Not mutagenic in the presence and absence of metabolic activation	Not mutagenic in the presence or absence of metabolic activation (Haworth *et al.*,1983)
***In vitro* Mouse lymphoma assay L5178Y/TK+/- (OECD 476)**	Not mutagenic in the presence and absence of metabolic activation	**Mutagenic in the absence of metabolic activation** Not mutagenic in the presence of metabolic activation (Douglas *et al.*,1988)
***In vitro* mammalian micronucleus test on cultured human lymphocytes (Annex X, test method/OCDE: 487) (CSR 2016)**	Not tested	**Positive in the absence and the presence of metabolic activation without FISH Clastogenic and /or aneugenic** [redacted] provided by registran(s)
In vitro unscheduled DNA Synthesis assay in human WI-38 cells.	**Significant increases of the unscheduled DNA synthesis**	Not tested
In vitro / in vivo replicative DNA synthesis (RDS) assay in hepatocytes primary culture cells (CSR 2016)	Not tested	Negative (Yoshifumi *et al.*,1994)
Mouse Dominant Lethal Assay (OECD 478)	**Ambiguous**	Not tested
Sex-Linked Recessive Lethal (SLRL) test (genetic toxicity *in vitro*, other) Drosophila melanogaster (CSR 2016)	Not tested	Negative (Fourernan *et al.*,1994)
In vitro transformation test in BALB/3T3 cells	**ambiguous results in the absence of exogenous activation**	**Positive in the absence of exogenous activation**

Available data showed a clear clastogenic potential *in vitro* of the chlorendic acid, the degradation product of the registered substance chlorendic anhydride as well as alerts for chlorendic anhydride. Based on these results and, as mentioned in the previous decision, because of this concern in *in vitro* tests, ECHA considers there is a need to perform additional genotoxicity studies *in vivo*.

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It should be reminded that the carcinogenicity potential of chlorendic acid was tested by oral administration in both mice and rats by the US National Toxicology Program (NTP). In the mouse carcinogenicity study (US NTP (1987[4]), TG OECD 453 non GLP), diet containing 0, 620 or 1250 ppm chlorendic acid (purity > 98%) was given to groups of 50 males and 50 females B6C3F1 mice for 103 weeks. The estimated daily intake of chlorendic acid was 89 and 185 mg/kg body weight/day for low and high-dose males and 100 and 207 mg/kg bw/d for low and high-dose female mice. All still alive mice were killed at week 112. In this study, there was a clear evidence of carcinogenicity of chlorendic acid for male mice as shown by an increased incidence of hepatocellular adenomas and of hepatocellular carcinomas. There was no evidence of carcinogenicity for female mice given chlorendic acid in the diet at concentrations of 620 or 1,250 ppm for 103 weeks since no effects were seen. In the rat carcinogenesis study (US NTP (1987) OECD 453, non GLP); chlorendic acid was administered in diet to groups of 50 males and 50 females F344/N rats at concentrations of 0, 620, or 1250 ppm for 103 weeks. The estimated mean daily consumption of chlorendic acid was 27 and 56 mg/kg bw/d for low dose and high dose male rats and 39 and 66 mg/kg for low dose and high dose female rats. The incidences of non-neoplastic lesions of the liver in dosed male rats (cystic degeneration) and dosed female rats (granulomatous inflammation, pigmentation, and bile duct hyperplasia) were increased. The incidences of neoplastic nodules of the liver were significantly increased in both males and females. Incidence of hepatocellular carcinomas was also significantly increased in females. The incidences of acinar cell hyperplasia and acinar cell adenomas of the pancreas were increased in dosed male rats relative to those of controls. The incidence of acinar-cell adenomas of the pancreas was significantly increased however pancreatic acinar cell adenoma is an uncommon neoplasm in untreated control F344/N rats in NTP studies. In dosed male rats, incidences of alveolar/bronchiolar adenomas of the lung were increased. The incidences of sarcomas, fibrosarcomas, or neuro-fibrosarcomas (combined) of the salivary gland were increased in dosed male rats. Although the incidences in the dosed groups were not significantly different from that in the controls, these tumours are uncommon in F344/N rats receiving no treatment.

In this study the reproductive organs were also affected in male and female rats in a non-dose-dependent manner. Incidence in preputial gland adenoma, carcinomas or squamous cell papilloma significantly increased in low dose male rats compared to control rats (1/50 (2%) control male rats; 10/50 (20%) low dose male rats ($p<0.05$); 4/50 (8%) high dose male rats). In low dose males combined adenoma, carcinomas and squamous cell papilloma rates are the following; Overall rates: 10/50 (20%); Adjusted rates: 27.8%; Terminal rates: 7/32 (22%). These incidences are clearly above the NTP historical control data (HCD) (6%±5%).

Uterus/endometrium was affected with a significant increase in incidence of endometrial stromal polyp in low dose female rats compared to control rats (6/50 (12%) female control rats, in 15/49 (31%) female low dose rats ($p<0.05$), in 10/50 (20%) female high dose rats. These incidences in the low dose female rats are clearly above the NTP HCD (22%±8%).

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[4] National Toxicology Program. U. S Department Of Health And Human Services. Public Health Service. National Institutes of Health (1987a). The Toxicology and Carcinogenesis Study of Chlorendic Acid (CAS NO 115-28-6) In F344/N Rats and B6C3F1 Mice (Feed Studies). Testing laboratory: National Toxicology Program. U. S Department Of Health And Human Services. Public Health Service. National Institutes of Health. Report no.: NTP Technical Report series N 304. Owner company: National Toxicology Program. U. S Department Of Health And Human Services. Public Health Service. National Institutes of Health.

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Therefore based on the effects seen in carcinogenicity studies and based on the concern raised in the *in vitro* mutagenicity studies available, further information to clarify the genotoxic potential of the chlorendic acid *in vivo* is deemed necessary. This information is required also in order to determine the appropriate classification of chlorendic acid and chlorendic anhydride for mutagenicity in somatic and germ cells as well as carcinogenicity. The results of the requested study could also impact risk assessment by allowing the identification of a non-threshold or a threshold-based mechanism of action to be considered for proper risk assessment and the control of risk to humans.

What is the possible regulatory outcome

The first possible regulatory outcome may be to identify the substance chlorendic anhydride as a CMR substance affecting the genotoxicity/mutagenicity and/or carcinogenicity. Depending on the outcome of the study and other available information, a harmonized classification proposal to upgrade the current harmonized classification for the chlorendic anhydride (Warning, skin irritation H315, eye irritation H319, STOT SE3 H335) and a proposal to apply harmonised classification also for its acid under EC Regulation N° 1272/2008 shall be considered. Taking into consideration the uses of the substance, further options might be discussed such as an identification of the substance as an SVHC.

Considerations on the test method and testing strategy

According to the ECHA "guidance on information requirements and chemical safety assessment (Version 4.1, version 6.0; July 2017), Chapter R.7a, section R.7.7.6.3", there are different options as a follow-up *in vivo* study after a positive results in an *in vitro* micronucleus assay (OECD 487):

The mammalian erythrocyte micronucleus test (OECD TG 474) has the advantage of detecting both structural chromosomal aberration (resulting from clastogenicity) and numerical chromosomal aberrations (resulting from aneuploidy). The *in vivo* micronucleus test is suitable to follow-up a positive *in vitro* result on chromosomal aberration if the test substance or its metabolite(s) will reach the target tissue.

Alternatively, the *in vivo* mammalian alkaline comet assay (OECD TG 489) is also suitable to follow up positive *in vitro* result for gene mutation and chromosomal aberrations. The comet assay is also an indicator assay detecting putative DNA lesions. ECHA notes that a positive result in whole gonads is not necessarily reflective of germ cell damage since gonads contain a mixture of somatic and germ cells. However, such positive results would indicate that the substance and /or its metabolite(s) have reached the gonads and caused genotoxic effects if the treatment time is sufficient for gonadal cells to be exposed. This type of evidence may be relevant for the overall assessment of possible germ cell mutagenicity including classification and labelling according to the CLP regulation.

ECHA considers the micronucleus test combined with the comet assay to be most appropriate for the substance subject to the decision. It needs to be ensured that a combination of studies does not impair the validity and the results of the information of each individual study (Sasaki *et al.*, 2000[5]).

[5] Sasaki YF, Sekihashi K, Izumiyama F, Nishidate E, Saga A, Ishida K, Tsuda S (2000) The Comet Assay with Multiple Mouse Organs: Comparison of Comet Assay Results and Carcinogenicity with 208 Chemicals Selected from the IARC Monographs and U.S. NTP Carcinogenicity Database. Critical Reviews in Toxicology 30(6):629-799

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Based on considerations listed in the decision on substance evaluation for the Registered substance that was notified to you on 19 March 2015, it is clear that the toxicity of chlorendic anhydride and chlorendic acid are closely related. Considering chlorendic anhydride is converted to its degradation product chlorendic acid in aqueous medium, it is reasonable to consider that, in mammals chlorendic anhydride will be transformed into chlorendic acid. Therefore a concern remains on the possible genotoxic potential of both chlorendic anhydride and its degradation product the chlorendic acid on somatic cells and germ cells.

Species selection
According to the test method OECD 489 rats are routinely used for the comet assay and mice or rats are the preferred species for the mammalian erythrocyte micronucleus test according to test method OECD 474. Hence ECHA considers that testing should be performed in rats.

Route of exposure
ECHA considers that the oral route is the most appropriate route of administration for substances except gases for testing for mutagenicity. Since the substance to be tested is a solid, ECHA concludes that testing should be performed by the oral route. The tests shall be conducted in conformity with the relevant OECD Test guidelines. Animals shall be dosed with chlorendic acid 48, 24 and 3 hours prior to sacrifice.

Tissue selection

Somatic cells: Liver tissue and glandular stomach, duodenum and, if technically feasible, pancreas for comet assay: As set in OECD 489, the liver is recommended as the primary site of xenobiotic metabolism, and an often highly exposed tissue to both parent substance and metabolites. The liver is also frequently a target organ for carcinogenicity. Indeed, in NTP carcinogenicity studies, some effects on liver such as increased incidences of hepatocellular adenomas and carcinomas were observed in mice following exposure to chlorendic acid, the metabolism product of chlorendic anhydride. In rat, the liver effects observed were an increase in non-neoplastic lesions of the liver (cystic degeneration in males and granulomatous inflammation, pigmentation and bile duct hyperplasia in females), an increase in neoplastic nodules of the liver in both sexes and an increase in hepatocellular carcinomas in females. The glandular stomach and duodenum are recommended as tissues to examine site of contact effects after oral exposure. In view of the following possible variables; different tissue structure and function of the stomach and duodenum, different pH conditions; probable different absorption rates of the substance and possible breakdown product(s) between these two tissues, ECHA considers that it is necessary to sample both glandular stomach and duodenum to increase the reliability of the analysis of genotoxicity at the site of contact.

Furtheremore, adenomas of pancreas were observed in the NTP carcinogenicity study. Nevertheless ECHA acknowledges that pancreas is, in rat, a diffuse tissue and laboratories do not include pancreas as a regular process in their comet assays. Consequentely robust historical controls may not be available. Therefore pancreas should be one of the required target tissues only if technically feasible.

In humans, cyclic acid anhydrides can cause irritation after direct contact with the mucous membranes or after exposure by inhalation (Cyclic Acid Anhydrides: Human Health Aspect. Concise International chemical Assessment Document 75. World Health Organization. 2009). In two studies conducted (non-standard method and no test guideline) chlorendic

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acid was identified as a promoting carcinogenic agent in rat liver according to the initiation promotion assay (Kitchin *et al.*,1993[6]), while the results of four *in vivo* biochemical assays using biomarkers returned negative results (Dragan et al.,1991[7]). The major site of chlorendic acid deposition was the liver, with smaller amounts found in the blood, muscle, skin, and kidneys (Decadand Fields, 1982[8]). The occurrence of dose-dependent hepatomegaly and bile-duct hyperplasia and liver lesions also occurred in mice and included centrolobular cyomegaly and coagulative necrosis at high doses (NTP, 1987). In a short-term toxicity study by inhalation submitted by you, liver weights and liver to brain weight ratios for both sexes of rats exposed to the substance anhydride were significantly elevated in comparison to the control rats. Hepatocytomegaly of centrilobular hepatocytes were also observed in treated animals.

Germ cells: Tissue for comet assay:
As reproductive organs were affected in carcinogenicity studies available with chlorendic acid, gonadal cells shall be analysed in addition to the somatic tissues listed above. Male germ cells shall be collected from the testes.

Micronucleus test:
For the micronucleus test the bone marrow shall be analysed. ECHA considers that, analysing bone marrow yields the best information on clastogenicity and aneuploidy in comparison to peripheral blood. Aneuploidy shall be assessed using FISH.

If the comet assay requested in this decision is positive on gonadal cells, a harmonized classification of both chlorendic anhydride and chlorendic acid as Muta. Cat. 1B should be envisaged. The most recent version of the test guideline (2016) the Comet Assay (OECD 489) is not validated to measure DNA strand breaks in mature germ cells (paragraph 10, OECD 489, 2016) and it is therefore not appropriate to use negative test results to conclude that a substance does not induce mutations in germ cells. If the results do not clarify the concern, further studies may be proposed. Indeed, as a possible follow-up a Mammalian Spermatogonial Chromosome Aberration Test (TG OECD 483), by oral route, in rats can be requested in order to clarify the effect on germ cells (based on the guideline in male rodents to accurately evaluate the effect of the treatment on cells that were spermatogonial stem cells during the exposure period).

Consideration of your comments on the draft decision *and PfAs*
Regarding the screening method for clastogenicity and aneuploidy it is possible to choose between two different methods. In your comments you indicated that you intend to use the FISH method as a better approach because the probes will bind to the DNA rather than to proteins. The evaluating MSCA agrees to keep the use of FISH method only to screen for aneuploidy and clastogenicity.

You also propose that a range finding study will be performed on both sexes and if no difference is seen between the two sexes, the full study would be performed in one sex only. The evaluating MSCA considers that a range finding is not needed to choose in which

[6] Kitchin K.T., Brown J. L., and Kulkarni A.P. Predicting rodent carcinogenicity of halogenated hydrocarbons by *in vivo* biochemical parameters. Teratogenesis, Carcinogenesis and Mutagenesis. Volume 13, Issue 4 (1993) Pages 167–184.

[7] Dragan Y, Rizvi T, Xu Y, Hully J, Bawa N, Campbell H, Maronpot R, Pitot H. An initiation-promotion assay in rat liver as a potential complement to the 2-year carcinogenesis bioassay. Fundam Appl Toxicol. 1991 Apr;16(3):525-47.

[8] Decad G. M., Fields M. T. (1982). Disposition and Excretion of chlorendic acid in Fisher 344 rats. Journal of Toxicolog and Envinronmental health, 9: 5-6, 911-920. Testing laboratory: Nat. Inst. of Health, Nat. Inst. of Environ. Health Sciences, Nat. Tox. Program, North Carolina. Report no.: n/a. Owner company: published data. Study number: n/a.

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sex the study should be performed. Indeed based on the findings in the 2-year feed study the reproductive organs were affected in both sexes (increased incidence in preputial gland adenoma, carcinomas or squamous cell papilloma in male and increased incidence of endometrial stromal polyp in female). Therefore as it was demonstrated that both sexes seemed to react the same way, the combined *in vivo* micronucleus test and mammalian comet assay shall be performed in male rats only in order to reduce animal testing.

Conclusion
Therefore, based on the substance evaluation and in accordance with Article 46(3) of the REACH Regulation, ECHA concludes that you are required to carry out the following study: a combined *in vivo* mammalian erythrocyte micronucleus test in bone marrow with FISH and *in vivo* mammalian comet assay on the following tissues: liver, glandular stomach, duodenum,gonadal cells, and, if technically feasible, pancreas ; test methods EU B.12./OECD 474 and OECD 489 in male rats, oral route, using the degradation product: chlorendic acid.

2. Exposure assessment for the whole life-cycle and clarification of environmental release categories (ERC) for risk assessment

The concern identified

For the environmental exposure assessment, in the first decision on substance evaluation for the registered substance, notified to you on 19 March 2015 (request 9), you were requested to provide a justified exposure scenario covering the whole life-cycle of the substance (from the chemical production to the service-life of treated articles) for each uses of the substance (manufacture of chemicals, plastics, etc.) and/or each treated matrix (plastics, resins, polymers, etc.). If non-default values of relevant parameters, as provided in the Guidance, were used for the exposure assessment, justification was to be provided.

In the current registration dossier(s), only one scenario for the manufacture of uncured resins was provided. No risk assessment was carried out for all the other steps of the service-life nor for disposal. Moreover, for this unique scenario, no justification of the non-default values for the exposure scenario is available. Finally for the section Man via environment, it is indicated in the risk quantification 'CAUTION: Risk not controlled (based on qualitative risk characterization)'.

Why new information is needed

The absence of risk for the whole life-cycle of the substance (service-life and disposal) is not properly demonstrated and needs to be justified by calculations and arguments.

Concerning the choice of the emission parameters for the only scenario provided (manufacture of uncured resins), according to available data in the updated IUCLID dossier(s) from September 2016, the evaluating MSCA conclusions about the environmental risk assessment (ERA) show unacceptable risks for surface water, sediment and sewage treatment plant (STP). The main disagreement with the ERA you provided is the choice of the emission release category (ERC). The evaluating MSCA used for the ERA the parameters from ERC5, in compliance with the REACH guidance R12[9], described for

[9] https://echa.europa.eu/documents/10162/13632/information_requirements_r12_fr.pdf/1c953924-fd54-475c-b1ba-e822af97ef3a Chapter R12 guidance

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"flame retardants in article matrix or coatings on articles". Indeed, the flame retardant use is claimed for the substance. In ERC5, massive releases towards water (before STP) and soil are admitted. Unlike the evaluating MSCA, you used emission fractions related to ERC6d (but not exactly the indicated values) for the "use of reactive process regulators in polymerization processes with inclusion or not into/onto article" with no identified risk for the environmental compartments due to very low release factors for water and soil.

Therefore, as risks are foreseen with the standard release parameters, refinements using specific guidance as the Emission scenario document on plastic additives[10] or risk management measures allowing a proper risk management at this step of the service-life are required. Finally for the section Man via environment, it is indicated in the risk quantification 'CAUTION: Risk not controlled (based on qualitative risk characterization)'. Additional information is necessary to prove that risks are properly managed in this case.

What is the possible regulatory outcome

The available data in the registration dossier leads to unacceptable risks for the aquatic compartment and the STP, according to the risk assessment performed by the evaluating MSCA, and for man via the environment (according to your assessment) for the manufacture step of uncured resins. Scenarios are missing for the other steps of the service-life. The lack of justification for the non-default values of the exposure scenario leading to low release towards environment and the missing scenarios could lead to apply non relevant risk management measures or restriction of the uses. In the absence of more specific information a conservative exposure assessment is performed with default values.

Consideration of your comments on the draft decision and PfAs

To justify the low releases of chlorendic anhydride or its transformation products after the resin synthesis and the choice of the ERC6d, you provided a justification based on measurements of residual chlorendic anhydride and acid in uncured and cured polyester resins. The conclusion of the available data demonstrated residues of chlorendic acid in the different resins after the synthesis. Nevertheless, as the process of resin synthesis was not described, especially the quantity of substance used for the reaction or the level of non-reacting substance at the end of the process, it is not possible to confirm that chlorendic anhydride (or its transformation products) totally reacts during the process and ERC6d can be used. A mass balance of the reaction process should have been provided. Moreover this study confirms the level of chlorendic acid in the resin but does not prove the low release of the substance during the process. In conclusion, this study is considered not relevant to refine the release fractions for the manufacture of uncured resins but can probably be used for the assessment of the resin service-life and disposal.

You also justified the choice of the ERC6d by the fact that the chemical behavior of the substance is that of a monomer in polymer synthesis. Nevertheless, according to the R.16 guidance, this use category corresponds to the ERC6c (Use of monomer in polymerization processes at industrial site (inclusion or not into/onto article)) with higher release to water than ERC6d also leading to unacceptable risks.

To refine the exposure assessment considering more relevant parameters specifically dedicated to the use of your substance, the emission scenario document on plastics

[10] OECD series on emission scenario documents, 3, Emission scenario document on plastic additives, ENV/JM/MONO(2004)8/REV1, 2009

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additives cited above can be used. This document is proposed as an alternative to the spERC values not available yet for this sector. Additionally, as explained in the initial draft decision, the evaluating MSCA has also identified a concern for toxicity to the sediment organisms. Therefore, in the initial draft decision the evaluating MSCA had requested a long term sediment test (OECD TG 218, 225 or 233) in order to clarify ecotoxicity of chlorendic acid in sediment.

In your comments to the draft decision you indicated among others that there is no risk to the sediment compartment. However, additional information is requested for the clarification of the exposure. It seems therefore reasonable to wait for this clarification to be available to see if additional toxicity data is needed to refine the risk assessment. On this basis the evaluating MSCA agrees to wait for the outcome of the environmental risk assessment for the substance before requesting a long term sediment test. On this basis, the request for this test has been dropped. But, based on the update of environmental risk assessment, ECHA may issue a new substance evaluation decision requesting further information to clarify the aquatic toxicity of the substance.

Conclusion

Risks were identified in the CSR by the evaluating MSCA for aquatic compartment and sewage treatment plant and for man via the environment. In conclusion, you are required to provide detailed information on the environmental exposure assessment, as described above, and the environmental risk assessment has to be updated accordingly:

Please provide detailed description of the life-cycle with identification of the substance(s) of interest (including chlorendic anhydride, its hydrolysis degradation product, chlorendic acid and any other relevant transformation/degradation product) along the whole life-cycle and exposure scenarios for the relevant steps. The choice of the exposure scenarios must be justified (e.g. polymerisation properties of chlorendic anhydride leading to the choice of a specific ERC and revised release factors must be fully proved). If the parameters used for the environmental risk assessment are not the default value of the relevant ERC, a justification must be provided. Additional information is needed in case of identified risks to justify their proper management.

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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 CMR properties, exposure of environment, exposure of workers, suspected PBT/vPvB 1,4,5,6,7,7-hexachloro-8,9,10-trinorborn-5-ene-2,3-dicarboxylic anhydride CAS No115-27-5 (EC No 204-077-3) was included in the Community rolling action plan (CoRAP) for substance evaluation to be evaluated in 2013. The updated CoRAP was published on the ECHA website on 20 March 2013. ANSES as the Mandated National Institute for the competent authority of France (hereafter called the evaluating MSCA) was appointed to carry out the evaluation.

In accordance with Article 46(1) of the REACH Regulation, a substance evaluation decision was issued on 19 March 2015 requesting further information. You submitted all the requested information on 22 September 2016. The evaluating MSCA carried out the evaluation of the information in your updated registration(s) and other relevant and available information.

In the course of the follow-up evaluation, the evaluating MSCA considered that the concerns for mutagenicity and exposure have not been clarified.

The evaluating MSCA considered that further information has to be required to clarify the abovementioned concerns. Therefore, it prepared a draft decision under Article 46(3) of the REACH Regulation to request further information. It subsequently submitted the draft decision to ECHA on 22 September 2017.

Registrant(s)' commenting phase

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

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

The evaluating MSCA took the comments from you, which were sent within the commenting period, into account and they are reflected in the reasons (Appendix 1). The requests were amended.

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

The evaluating MSCA notified the draft decision to the competent authorities of the other Member States and ECHA for proposal(s) for amendment.

Subsequently, the evaluating MSCA received some proposal for amendment to the draft decision according to which the decision was modified when considered as necessary.

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

ECHA invited you to comment on the proposed amendment(s). Any comments on the proposal(s) for amendment were taken into account by the Member State Committee and are reflected in the Reasons (Appendix 1). The Member State Committee did not take into

account any comments on the draft decision as they were not related to the proposal(s) for amendment made and are therefore considered outside the scope of Article 52(2) and Article 51(5).

MSC agreement seeking stage

The Member State Committee reached a unanimous agreement on the draft decision in its MSC-62 written procedure and ECHA took the decision according to Article 51(6) of the REACH Regulation.

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

ECHA
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 otherwise fulfil 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 ('test material') has to 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 the 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 stud(y/ies) 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 will 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 stud(y/ies) on behalf of all of them.