Assessment of regulatory needs

Authority: European Chemicals Agency (ECHA)

Group Name: Aliphatic esters from ≥ C10 alcohols

General structure: -

Revision history

Version	*Date*	*Description*
1.0	12 February 2021	

Substances within this group:

EC/List no	CAS no	Substance name	Registration type (full, OSII or TII, NONS, cease manufacture), highest tonnage band among all the registrations (t/y) [1]
297-365-3	93455-79-9	Fatty acids, coco, decyl esters	Not registered
807-157-1	129677-93-6	Fatty acids, C8-10, C8-10-alkyl esters	Full, 10-100 t/y
218-981-0	2306-89-0	decyl octanoate	Not registered
942-072-4		Fatty acids, C8-C18 (even numbered), decyl esters	Full, not (publicly) available
253-087-4	36528-28-6	decyl laurate	Full, not (publicly) available
222-981-6	3687-46-5	decyl oleate	Full, >1,000 t/y
218-039-9	2040-64-4	dodecyl myristate	Full, 1-10 t/y
237-725-9	13945-76-1	dodecyl laurate	Full, 10-100 t/y
241-644-4	17671-26-0	dodecyl nonan-1-oate	Full, not (publicly) available
252-862-4	36078-10-1	dodecyl oleate	Full, 1,000-10,000 t/y
250-696-7	31556-45-3	tridecyl stearate	Not registered
947-344-6		Fatty acids, C16-18 tridecyl esters	Full, not (publicly) available
938-075-5		Reaction mass of dodecyl laurate, dodecyl myristate, tetradecyl laurate and tetradecyl myristate	OSII or TII, not (publicly) available
244-966-3	22412-97-1	tetradecyl laurate	Full, not (publicly) available
221-787-9	3234-85-3	tetradecyl myristate	Full, >100 t/y
241-640-2	17661-50-6	tetradecyl stearate	Full, 100-1,000 t/y
244-949-0	22393-85-7	tetradecyl oleate	Full, not (publicly) available
270-163-2	68412-06-6	9-Octadecenoic acid (Z)-, C12-15-alkyl esters	Not registered
208-736-6	540-10-3	hexadecyl palmitate	Full, >100 t/y
233-864-4	10401-55-5	Hexadecyl (R)-12-hydroxyoleate	Full, not (publicly) available
306-082-7	95912-86-0	Fatty acids, C8-10, C12-18-alkyl esters	Full, >1,000 t/y
306-083-2	95912-87-1	Fatty acids, C16-18, C12-18-alkyl esters	Full, 1,000-10,000 t/y
287-634-3	85566-24-1	Fatty acids, C14-18, C14-18-alkyl esters	Full, not (publicly) available
700-380-4		[No public or meaningful name is available]	Full, not (publicly) available
306-797-4	97404-33-6	Fatty acids, C16-18, C16-18-alkyl esters	Full, 1,000-10,000 t/y
242-200-2	18312-31-7	octadecyl octanoate	Not registered
915-334-0		Reaction mass of octadecyl heptanoate and octadecyl octanoate	Full, 10-100 t/y
220-476-5	2778-96-3	octadecyl stearate	Full, not (publicly) available
246-115-1	24271-12-3	octadecyl docosanoate	Full, 0-10 t/y
939-715-6	1474044-78-4	Fatty acids, C12-18, C16-20-alkyl esters	Full, not (publicly) available

[1] The total aggregated tonnage band may be available on ECHA's webpage at https://echa.europa.eu/information-on-chemicals/registered-substances

EC/List no	CAS no	Substance name	Registration type (full, OSII or TII, NONS, cease manufacture), highest tonnage band among all the registrations (t/y) [1]
701-233-7		Fatty acids C20-22 (even numbered), C18-22 (even numbered) alkyl esters	Full, 100-1,000 t/y
241-646-5	17671-27-1	docosyl docosanoate	Full, not (publicly) available
244-971-0	22413-03-2	docosyl stearate	Full, 10-100 t/y
296-566-3	92797-30-3	Fatty acids, C14-22, C16-24-alkyl esters	10-100 t/y; 1/0
292-792-1	90990-29-7	Fatty acids, C16 and C18-22 -unsatd., C16-18 and C18 unsatd. alkyl ester	Full, not (publicly) available
297-617-2	93685-70-2	Fatty acids, C18-unsatd., C16 and C18-unsatd. alkyl esters	Not registered
222-980-0	3687-45-4	(Z)-octadec-9-enyl oleate	Full, 100-1,000 t/y
241-654-9	17673-56-2	(Z)-octadec-9-enyl (Z)-docos-13-enoate	Full, not (publicly) available

This table contains also group members that are only notified under the CLP Regulation, however, the list is not necessarily exhaustive.

Contents

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The author does not accept any liability with regard to the use that may be made of the information contained in this document. Usage of the information remains under the sole responsibility of the user. Statements made or information contained in the document are without prejudice to any further regulatory work that ECHA, the Member States or other regulatory agencies may initiate at a later stage. Assessments of regulatory needs and their conclusions are compiled on the basis of available information and may change in light of newly available information or further assessment.

Foreword

The assessment of regulatory needs of a group of substances is an iterative, informal process to help authorities consider the most appropriate way to address an identified concern for a group of substances or a single substance and decide whether further regulatory risk management activities are necessary.

The grouping is mainly based on structural similarity and associations made by the registrants between substances through read-across and category approaches as well as category associations from external sources (e.g. OECD categories)[2]. These methods are different from grouping as defined in Section 1.5 of Annex XI to REACH because the scope and intended use of ECHA's grouping is different. Thus, in this context, grouping does not aim to validate read-across and category approaches according to the Annex XI requirements but rather to support a faster and more consistent approach for regulating chemicals and avoid regrettable substitution.

The focus of the assessment is largely based on information available in the registration dossiers and on properties requiring regulatory risk management action at EU level[3]. The information reported on uses is from the registration dossiers (IUCLID) and is used as a proxy for assessing how widespread uses are and whether potential for exposure to humans and releases to the environment can be expected. The chemical safety reports are not necessarily consulted and no quantitative exposure assessment is performed at this stage.

The outcome of these assessments are proposals for immediate (the first action) and subsequent regulatory action(s), including the foreseen ultimate regulatory action (last foreseen regulatory action) to address the identified concern(s) in case the potential hazards are confirmed. For example, further data generation through compliance check is suggested as a first action, to confirm the identified hazard.

Where hazards are confirmed, regulatory risk management actions could be considered for the whole group, for a subgroup or for individual substances within the group. The robustness of the group depends on the stage of assessment and the level of certainty this stage requires. For example, the needs for grouping under restriction may differ from the needs for grouping for the purpose of harmonised classification. Group membership is reconsidered accordingly throughout the iterative assessment of regulatory needs, for example, after further information is generated and the hazard has been clarified or when new insights on uses and risks are available.

The assessment of regulatory needs in itself does not represent a regulatory action, but rather a preparatory step to consider further possible regulatory actions at the level of individual substances or groups/subgroups of substances.

[2] Working with Groups - ECHA (europa.eu)

[3] Regarding hazard properties the focus is for instance on CMR (carcinogenic, mutagenic and/or toxic to reproduction), sensitiser, ED (endocrine disruptor), PBT/vPvB or equivalent (e.g. substances being persistent, mobile and toxic), aquatic toxicity hazard endpoints and therefore only those are reflected in the report. This does not mean that the substances do not have other known or potential hazards. In some specific cases, ECHA may consider additional hazards (e.g. neurotoxicity, STOT RE).

Publication of ARNs makes it easier for companies to follow the latest status of their substances of interest, anticipate potential regulatory actions and make strategic choices in their chemicals portfolio.

For more information on assessments of regulatory needs please consult ECHA's website[4].

[4] https://echa.europa.eu/understanding-assessment-regulatory-needs

Glossary

ARN	Assessment of Regulatory Needs
CCH	Compliance Check
CLH	Harmonised classification and labelling
CMR	Carcinogenic, mutagenic and/or toxic to reproduction
DEv	Dossier evaluation
ED	Endocrine disruptor
NONS	Notified new substances
OEL	Occupational exposure limit
OSII or TII	On-site isolated intermediate or transported isolated intermediate
PBT/vPvB	Persistent, bioaccumulative and toxic / very persistent and very bioaccumulative
PMT/vPvM	Persistent, mobile, and toxic / very persistent and very mobile
RDT	Repeated dose toxicity
RMOA	Regulatory management options analysis
RRM	Regulatory risk management
SEv	Substance evaluation
STOT RE	Specific target organ toxicity, repeated exposure
SVHC	Substance of very high concern
TPE	Testing proposal evaluation

1 Overview of the group

Explanations on the scope of this assessment is available in the foreword to this document. Please read it carefully before going through the report.

ECHA has grouped together structurally similar substances based on the presence of linear esters of alcohols and fatty acids.

The substances of this group consist of linear esters of alcohols (C10-24)[5] and fatty acids (C7-C22). Primary alkyl alcohols and fatty acids are saturated or unsaturated with no other additional functional group/moieties in their structure.

There are 38 substances in the group of which 30 with full registrations, one with intermediate registration and 7 are not registered.

Several substances of the group are used at high volumes and in a high number applications with a high potential for exposure for workers and consumers and release to the environment.

Based on information reported in the REACH registration dossiers, the substances are used in a variety of product categories (e.g. washing and cleaning, lubricants, (scented) clothes, rubber and plastics) and in articles, including applications where other legislations than REACH/CLP apply (e.g. cosmetics, medical devices, food contact material, plant protection products).

The available information indicates that substitution within the group is likely.

[5] The scope of this group is limited to esters with alcohol carbon numbers greater than or equal to C10. However, substance 'Fatty acids, C8-10 (even numbered), C8-10 (even numbered) alkyl esters' (List number 807-157-1) that contains also C8 alcohol has also been included in this group because the highest alcohol carbon number C10 has been used for grouping purposes.

2 Conclusions and proposed actions

The conclusions and actions proposed in the table below are based mainly on the REACH and CLP information available at the time of the assessment by ECHA. The conclusions are preliminary suggestions from a screening-level assessment done by ECHA with the aim to propose the next steps for further work (e.g., strengthening of the hazard conclusions, clarification of the uses and/or potential for exposure). The main source of information is the registration dossiers. Relevant public assessments may also be considered. When new information (e.g., on hazards through evaluation processes, or on uses) will become available, the document may be updated, and conclusions and actions revisited.

Table 1: Conclusions and proposed actions

EC/List no	Human Health Hazard	Environmental Hazard	Relevant use(s) & exposure potential	Suggested regulatory actions
297-365-3 807-157-1 218-981-0 942-072-4 253-087-4 222-981-6 218-039-9 237-725-9 241-644-4 252-862-4 250-696-7 947-344-6 938-075-5 244-966-3 221-787-9 241-640-2 244-949-0 270-163-2	No hazard or unlikely hazard except for EC 241-644-4 that is self-classified as Skin Sens 1.	No hazard or unlikely hazard	Widespread uses in e.g. washing and cleaning, lubricants, (scented) clothes, rubber and plastics) etc. Potential for exposure for workers and consumers and release to the environment, or potential substitute.	No action <u>Justification</u>: Overall, no or unlikely hazard that would lead to concern for the reported uses. For EC 241-644-4 harmonised/self-classification (will) require company level risk management measures (RMM) for workers to be in place. The concern related to the presence of skin sensitisers in consumer mixtures is under investigation.

EC / List no	Human Health Hazard	Environmental Hazard	Relevant use(s) & exposure potential	Suggested regulatory actions
208-736-6 233-864-4 306-082-7 306-083-2 287-634-3 700-380-4 306-797-4 242-200-2 915-334-0 220-476-5 246-115-1 939-715-6 701-233-7 241-646-5 244-971-0 296-566-3 292-792-1 297-617-2 222-980-0 241-654-9				

3 Justification for the no need for regulatory risk management action at EU level

Currently no need to suggest (further) regulatory risk management actions for all substances

Based on currently available information, there is no need for (further) EU regulatory risk management for all substances in the group.

Based on currently available information, for CMR, ED, skin sensitisation, STOT RE, PBT/vPvB, PMT/vPvM hazards are considered unlikely for all group members based on the available data from the registered substances and the expected metabolites/breakdown products.

Based on the evaluations[6] from other safety bodies, group members are expected to be hydrolysed into corresponding carboxylic acids and alcohols by carboxylesterase enzymes found in most tissues throughout the body, including the gastrointestinal tract. The resulting alcohols will be oxidised to their corresponding aldehydes and linear carboxylic acids, which will in turn be metabolised to carbon dioxide via the fatty acid pathways and the tricarboxylic acid cycle. The resulting carboxylic acids will undergo different metabolic pathways, depending on the carbon chain length and branching: beta-oxidation for short chains, omega-oxidation for long chains and alfa- and/or beta-oxidation for acids with a methyl substituent.

The majority of the carboxylic acid parts of these group members have been or are being assessed by ECHA (group on fatty acids expected to be of low toxicity and group on branched carboxylic acids, with short chain ones to be potential reproductive toxicants). Furthermore, the assessment of regulatory needs of the group of aliphatic alcohols has also concluded on potential low toxicity regarding the expected alcohol metabolites from the enzymatic hydrolysis of the esters in this group.

The available experimental data indicate no systemic effects up to the limit dose (NOAELs 1000 mg/kg bw/day) in screening reproductive toxicity studies. Negative results have been obtained with esters from this group tested for mutagenicity and skin sensitisation.

EC 241-644-4 has shown positive results in a local lymph node assay. The substance is self-classified as category 1 skin sensitiser. There is remaining uncertainty regarding the potency and the purity of the test material tested. The positive finding is not in line with the biology of esters having no functional group that would be expected to result in skin sensitisation potential. In addition, six substances from the group that have experimental data on skin sensitisation with the ester being tested, showed negative results.

The skin sensitisation hazard does not apply on the basis of structural similarity to any of the other esters in the group since there are negative results from other esters, the breakdown products of esters are not skin sensitizers and there are no structural alerts from functional groups for protein binding potential.

[6] JECFA, 1999 http://onlinelibrary.wiley.com/doi/10.2903/j.efsa.2013.3169/epdf; COM, 2003 https://ec.europa.eu/food/sites/food/files/safety/docs/sci-com_scf_out158_en.pdf; EFSA, 2013 http://onlinelibrary.wiley.com/doi/10.2903/j.efsa.2013.3169/epdf

The substances are readily biodegradable and have a low hazard for bioaccumulation based on a weight of evidence approach and the fate of such substance after entering an organism. Biotic degradation could potentially take place in the environment resulting in the presence of both the primary alkyl alcohol and the fatty acid rather than the parent substance. Screening of the available data shows no toxicity observed either up to the water solubility or above it.

EC 241-644-4 that is self-classified as Skin Sens. 1, is used as additive in polymer and plastics and in textiles treatment applications.

For industrial and professional uses, sufficient and consistent self-classification by registrants should require company level risk management measures (RMM) to be in place for workers. Adequate product labelling should in principle provide consumers with sufficient information to manage risks arising from the use of mixtures containing the substance.

However, there is a concern among authorities about presence of skin sensitisers in consumer mixtures and the need to further investigate whether further regulatory actions are needed and what would be the best options to address this concern has been identified in other groups of substances.

Work is ongoing on this generic issue by both Member States and ECHA which may affect the regulatory actions on substances in this group. Therefore, it is proposed that there is currently no need for EU-wide regulatory risk management.

There is remaining uncertainty regarding the breakdown of the esters, more specifically regarding the rate of hydrolysis, as the information available is mostly from literature sources and refers to the generic ability of carboxylesterases to breakdown the esters. No further action is currently proposed; information from the potential breakdown products (acids and alcohols) ARNs and the structurally similar esters when available will further inform on their hazardous properties and the strategy can be revisited.

Annex 1: Overview of classifications

Data extracted on 17 March 2020.

EC/ List No	Substance name	Harmonised classification	Classification in registrations
208-736-6	*hexadecyl palmitate*	*Not included in Annex VI*	-
218-039-9	*dodecyl myristate*	*Not included in Annex VI*	*Eye Irrit. 2 H319*
218-980-5	*octyl octanoate*	*Not included in Annex VI*	-
220-476-5	*octadecyl stearate*	*Not included in Annex VI*	-
221-787-9	*tetradecyl myristate*	*Not included in Annex VI*	-
222-980-0	*(Z)-octadec-9-enyl oleate*	*Not included in Annex VI*	-
222-981-6	*decyl oleate*	*Not included in Annex VI*	-
233-864-4	*Hexadecyl (R)-12-hydroxyoleate*	*Not included in Annex VI*	-
237-725-9	*dodecyl laurate*	*Not included in Annex VI*	-
241-640-2	*tetradecyl stearate*	*Not included in Annex VI*	-
241-644-4	*dodecyl nonan-1-oate*	*Not included in Annex VI*	*Skin. Sens. 1 H317*
241-646-5	*docosyl docosanoate*	*Not included in Annex VI*	-
241-654-9	*(Z)-octadec-9-enyl (Z)-docos-13-enoate*	*Not included in Annex VI*	-
244-949-0	*tetradecyl oleate*	*Not included in Annex VI*	-
244-966-3	*tetradecyl laurate*	*Not included in Annex VI*	-
244-971-0	*docosyl stearate*	*Not included in Annex VI*	-
246-115-1	*octadecyl docosanoate*	*Not included in Annex VI*	-
252-862-4	*dodecyl oleate*	*Not included in Annex VI*	-

EC/ List No	Substance name	Harmonised classification	Classification in registrations
285-200-8	*Fatty acids, C10-18 and C12-22-unsatd., C14-18 and C16-18-*	*Not included in Annex VI*	-
287-634-3	*Fatty acids, C14-18, C14-18-alkyl esters*	*Not included in Annex VI*	-
292-792-1	*Fatty acids, C16 and C18-22 - unsatd., C16-18 and C18*	*Not included in Annex VI*	-
293-003-3	*Fatty acids, C8-10, octyl esters*	*Not included in Annex VI*	-
296-566-3	*Fatty acids, C14-22, C16-24-alkyl esters*	*Not included in Annex VI*	-
306-082-7	*Fatty acids, C8-10, C12-18-alkyl esters*	*Not included in Annex VI*	-
306-083-2	*Fatty acids, C16-18, C12-18-alkyl esters*	*Not included in Annex VI*	-
306-797-4	*Fatty acids, C16-18, C16-18-alkyl esters*	*Not included in Annex VI*	-
700-380-4	*[No public or meaningful name is available]*	*Not included in Annex VI*	-
701-233-7	*Fatty acids C20-22 (even numbered), C18-22 (even*	*Not included in Annex VI*	-
807-157-1	*Fatty acids, C8-10, C8-10-alkyl esters*	*Not included in Annex VI*	-
915-334-0	*Reaction mass of octadecyl heptanoate and octadecyl*	*Not included in Annex VI*	-
938-075-5	*Reaction mass of dodecyl myristate and tetradecyl*	*Not included in Annex VI*	-
939-715-6	*Fatty acids, C12-18, C16-20-alkyl esters*	*Not included in Annex VI*	-
942-072-4	*Fatty acids, C8-C18 (even numbered), decyl esters*	*Not included in Annex VI*	-
947-344-6	*Fatty acids, C16-18 tridecyl esters*	*Not included in Annex VI*	-

Annex 2: Overview of uses based on information available in registration dossiers

Data extracted on 17 March 2020.

Table 2: Overview of main uses

Main types of applications structured by product or article types	807-157-1, 222-981-6, 252-862-4, 221-787-9, 244-949-0, (208-736-6)	942-072-4, 947-344-6, 244-966-3, 233-864-4	253-087-4	241-640-2	218-039-9, 208-736-6	237-725-9	241-644-4
Lubricants and greases	F, I, **C**						
Adhesives, Coatings and paints	F, I, **P, C**						
Cosmetic, personal care, pharmaceutical	F, **C**	F, **(P,) C**		F, **P, C**		F, **P, C**	
Paper and paper products	F, I			F, I, **A**			
Textiles and leather treatment	F , I, **A**		F, I, **A**			F, I, **A**	F, I, **A**
Vehicles or machinery	I, **A**						
Washing, cleaning, polishes	F, I, **P, C**					F, **C**	
Air care	F, **C**						
Anti-freeze and de-icing products	P, **C**						
Food beverage cleaning	F, I, **A**						
Cleaning of medical devices	F, **P**						
Explosives	I, **P**						
Fuels (additive)	I, **P, C**						
Functional fluids (open and closed)	I, **P, C**						
Biocides	**C**						

Main types of applications structured by product or article types	807-157-1, 222-981-6, 252-862-4, 221-787-9, 244-949-0, (208-736-6)	942-072-4, 947-344-6, 244-966-3, 233-864-4	253-087-4	241-640-2	218-039-9, 208-736-6	237-725-9	241-644-4
Building and construction	F, I, **P, C**						
Plant protection products	**P, C**						
Fertilisers	F, **P, C**						
Water treatment	F, I, **P**						
Oil and gas field drilling, mining	I, **P**						
Metal surface treatment	I						
Use in tyres and other rubber articles	F , I, **A**						
Additive in polymer, plastics and resins	F, I, **P, A**						F, I, **A**
Intermediate use	I						
Laboratory use	F, I, **P**						
Food contact material					F, I, **A**		

F: formulation, I: industrial use, P: professional use, C: consumer use, A: article service life; P, C and A are highlighted in red to indicate widespread use with potential for exposure/release

Table 3: Overview of main uses

Main types of applications structured by product or article types	306-082-7, 306-083-2, 287-634-3, 701-233-7	306-797-4, 939-715-6	700-380-4, 915-334-0	246-115-1	220-476-5	244-971-0	296-566-3
Lubricants and greases	F, I, **C**	F, I, **C**			F, I, **P**		
Adhesives, Coatings and paints	F, I, **P, C**	F, I, **P, C**		F, I, **P, C**	I	F, I, **P, C**	
Cosmetic, personal care, pharmaceutical	F, **C**	F, **C**	F, **C**		I		
Paper and paper products	F, I	F, I		I, **A**			
Textiles and leather treatment	F , I, **A**	F , I, **A**		I, **A**			
Vehicles or machinery	I, **A**	I, **A**		I, **A**			
Washing, cleaning, polishes	F, I, **P, C**	F, I, **P, C**	F, I, **P, C**				I
Air care	F, **C**	F, **C**	F, **C**				
Anti-freeze and de-icing products	P, **C**	P, **C**					
Food beverage cleaning	F, I, **A**						
Cleaning of medical devices	F, **P**						
Explosives	I, **P**						
Fuels (additive)	I, **P, C**	I, **P, C**					
Functional fluids (open and closed)	I, **P, C**	I, **P, C**					
Biocides	**C**	**C**	**C**				
Building and construction	F, I, **P, C**	F, I, **P, C**					
Plant protection products	**P, C**	**P, C**					

Main types of applications structured by product or article types	306-082-7, 306-083-2, 287-634-3, 701-233-7	306-797-4, 939-715-6	700-380-4, 915-334-0	246-115-1	220-476-5	244-971-0	296-566-3
Fertilisers	F, **P, C**	F, **P, C**					
Water treatment	F, I, **P**	F, I, **P**					
Oil and gas field drilling, mining	I, **P**	I, **P**					
Metal surface treatment	I	I					
Use in tyres and other rubber articles	F , I, **A**	F , I, **A**		I, **A**			
Additive in polymer, plastics and resins	F, I, **P, A**	F, I, **P, A**		I, **A**			F, I, **A**
Intermediate use	I	I	(I)				
Laboratory use	F, I, **P**	F, I, **P**					

F: formulation, I: industrial use, P: professional use, C: consumer use, A: article service life; P, C and A are highlighted in red to indicate widespread use with potential for exposure/release

Table 4: Overview of main uses

Main types of applications structured by product or article types	292-792-1	222-980-0	241-654-9
Lubricants and greases	F, I, **C**	F, I, **C**	
Adhesives, Coatings and paints	F, I, **P, C**	F, I, **P, C**	
Cosmetic, personal care, pharmaceutical	F, **C**	F, **P, C**	F, **C**
Paper and paper products		F, I, **A**	
Textiles and leather treatment	F , I, **A**	F , I, **A**	
Vehicles or machinery	I, **A**	I, **A**	
Washing, cleaning, polishes	F, I, **P, C**	F, I, **P, C**	
Air care	F, **C**	F, **C**	
Anti-freeze and de-icing products	P, **C**	P, **C**	
Food beverage cleaning		F, I, **A**	
Cleaning of medical devices		F, **P**	
Explosives	I, **P**	I, **P**	
Fuels (additive)	I, **P, C**	I, **P, C**	
Functional fluids (open and closed)	I, **P, C**	I, **P, C**	
Biocides	**C**	**C**	
Building and construction	F, I, **P, C**	F, I, **P, C**	
Plant protection products	**P, C**	**P, C**	

Main types of applications structured by product or article types	292-792-1	222-980-0	241-654-9
Fertilisers	F, I, **P, C**	F, I, **P, C**	
Water treatment	F, I, **P**	F, I, **P**	
Oil and gas field drilling, mining	I, **P**	I, **P**	
Metal surface treatment	I	I	
Use in tyres and other rubber articles	F , I, **A**	F , I, **A**	
Additive in polymer, plastics and resins	F, I, **P, A**	F, I, **P, A**	
Intermediate use	I	I	
Laboratory use	F, I, **P**	F, I, **P**	

F: formulation, I: industrial use, P: professional use, C: consumer use, A: article service life; P, C and A are highlighted in red to indicate widespread use with potential for exposure/release

Annex 3: Overview of completed or ongoing regulatory risk management activities

Data extracted on 17 March 2020.

There are no relevant completed or ongoing regulatory risk management activities for any of the substances.