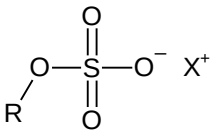
Assessment of regulatory needs

Authority: European Chemicals Agency (ECHA)

Group Name: Aliphatic sulfate monoesters

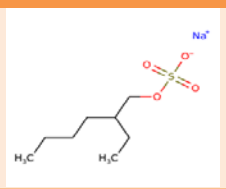
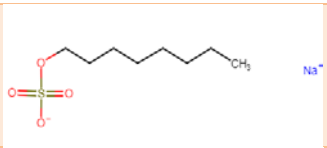
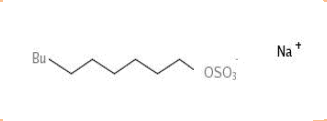
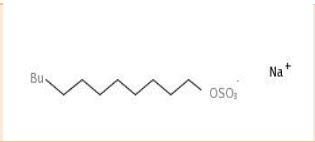
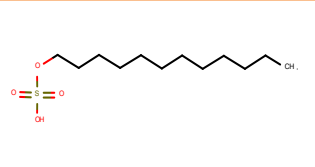
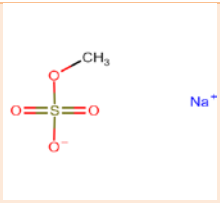
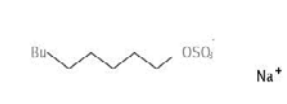
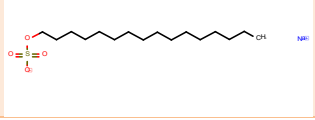
General structure:

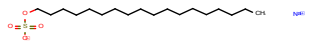
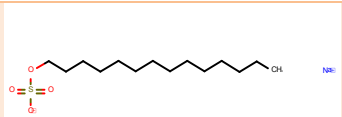
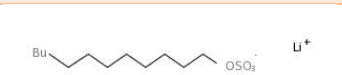
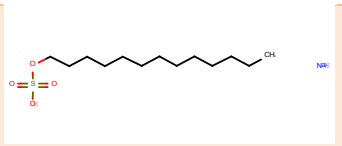
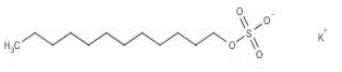
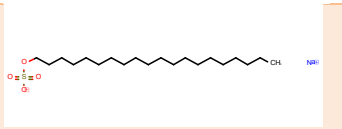
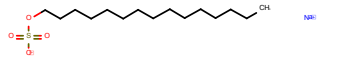
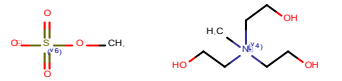
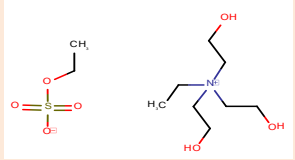


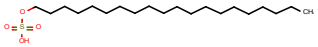
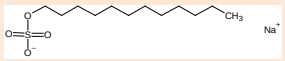
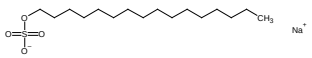
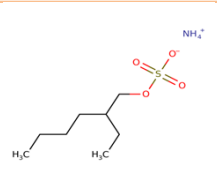
Revision history

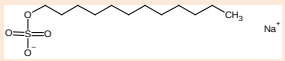
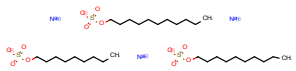
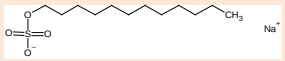
Version	*Date*	*Description*
1.0	20 October 2023	

Substances within this group:

EC/List no	CAS no	Substance name [and Substance name acronyms]	Chemical structures	Registration type (full, OSII or TII, NONS, cease manufacture), highest tonnage band among all the registrations (t/y) [1]
204-812-8	126-92-1	Sodium etasulfate		Full, >1000
205-380-3	139-88-8	Sodium tetradecyl sulfate	Not (publicly) available	C&L notification
205-535-5	142-31-4	Sodium octyl sulphate		Full, >1000
205-568-5	142-87-0	Sodium decyl sulphate		Full, 100-1000
205-788-1	151-21-3	Sodium dodecyl sulphate		Full, >1000
205-791-8	151-41-7	Dodecyl hydrogen sulphate		Not registered
208-142-7	512-42-5	Sodium methyl sulphate		Full, not (publicly) available
214-002-6	1072-15-7	Sodium nonyl sulphate		Full, not (publicly) available
214-292-4	1120-01-0	Sodium hexadecyl sulphate		C&L notification

EC/List no	CAS no	Substance name [and Substance name acronyms]	Chemical structures	Registration type (full, OSII or TII, NONS, cease manufacture), highest tonnage band among all the registrations (t/y) [1]
214-295-0	1120-04-3	Sodium octadecyl sulphate		C&L notification
214-737-2	1191-50-0	Sodium tetradecyl sulphate		C&L notification
218-058-2	2044-56-6	Lithium dodecyl sulphate		Full, not (publicly) available
221-188-2	3026-63-9	Sodium tridecyl sulphate		C&L notification
225-190-4	4706-78-9	Potassium dodecyl sulphate		Cease manufacture
236-125-4	13177-49-6	Sodium icosyl sulphate		C&L notification
236-475-8	13393-71-0	Sodium pentadecyl sulphate		C&L notification
244-955-3	22397-58-6	Zinc dodecyl hydrogen disulphate	Not (publicly) available	Full, not (publicly) available
249-655-6	29463-06-7	Tris(2-hydroxyethyl)methylammonium methyl sulphate		Full, not (publicly) available
250-796-0	31774-90-0	Ethyltris(2-hydroxyethyl)ammonium ethyl sulphate		Full, not (publicly) available

EC/List no	CAS no	Substance name [and Substance name acronyms]	Chemical structures	Registration type (full, OSII or TII, NONS, cease manufacture), highest tonnage band among all the registrations (t/y) [1]
266-790-6	67633-89-0	Icosan-1-yl hydrogen sulphate		Not registered
268-364-5	68081-96-9	Sulfuric acid, mono-C10-16-alkyl esters, ammonium salts	Not (publicly) available	C&L notification
268-365-0	68081-97-0	Sulfuric acid, mono-C10-16-alkyl esters, magnesium salts	Not (publicly) available	C&L notification
268-366-6	68081-98-1	Sulfuric acid, mono-C14-18-alkyl esters, sodium salts	Not (publicly) available	C&L notification
268-773-9	68140-10-3	Sulfuric acid, monotallow alkyl esters, sodium salts	Not (publicly) available	Not registered
271-557-7	68585-47-7	Sulfuric acid, mono-C10-16-alkyl esters, sodium salts	Not (publicly) available	C&L notification
272-575-8	68890-70-0	Sulfuric acid, mono-C12-15-alkyl esters, sodium salts	Not (publicly) available	C&L notification
273-257-1	68955-19-1	Sulfuric acid, mono-C12-18-alkyl esters, sodium salts	e.g. 	Full, >1000
273-258-7	68955-20-4	Sulfuric acid, mono-C16-18-alkyl esters, sodium salts	e.g. 	Full, not (publicly) available
273-259-2	68955-21-5	Sulfuric acid, mono-C14-18-unsatd. alkyl esters, sodium salts	Not (publicly) available	Not registered
274-625-4	70495-37-3	Ammonium 2-ethylhexyl sulphate		Full, not (publicly) available

EC/List no	CAS no	Substance name [and Substance name acronyms]	Chemical structures	Registration type (full, OSII or TII, NONS, cease manufacture), highest tonnage band among all the registrations (t/y) [1]
277-362-3	73296-89-6	Sulfuric acid, mono-C12-16-alkyl esters, sodium salts	e.g. 	Full, >1000
282-968-6	84501-49-5	Sulfuric acid, mono-C9-11-alkyl esters, sodium salts		Full, 100-1000
285-260-5	85049-86-1	Sulfuric acid, mono-C10-12-alkyl esters, sodium salts	Not (publicly) available	C&L notification
286-718-7	85338-42-7	Sulfuric acid, mono-C8-10-alkyl esters, sodium salts	Not (publicly) available	C&L notification
287-809-4	85586-07-8	Sulfuric acid, mono-C12-14-alkyl esters, sodium salts	e.g. 	Full, >1000
287-840-3	85586-38-5	Sulfuric acid, mono-C8-18-alkyl esters, magnesium salts, compds. with triethanolamine	Not (publicly) available	C&L notification
288-134-8	85665-45-8	Sulfuric acid, mono-C8-14-alkyl esters, compds. with triethanolamine	Not (publicly) available	C&L notification
288-206-9	85681-68-1	Sulfuric acid, mono(C14-18 and C16-18-unsatd. alkyl) esters, sodium salts	Not (publicly) available	C&L notification
289-127-2	86014-79-1	Sulfuric acid, mono-C13-15-alkyl esters, sodium salts	Not (publicly) available	Not registered
292-208-5	90583-10-1	Sulfuric acid, mono-C8-14-alkyl esters, ammonium salts	Not (publicly) available	C&L notification
292-209-0	90583-11-2	Sulfuric acid, mono-C12-14-	Not (publicly) available	C&L notification

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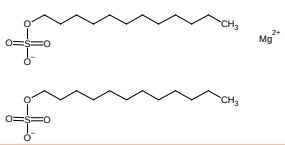
		alkyl esters, ammonium salts		
292-210-6	90583-12-3	Sulfuric acid, mono-C12-16-alkyl esters, ammonium salts	Not (publicly) available	C&L notification
292-214-8	90583-16-7	Sulfuric acid, mono-C12-14-alkyl esters, compds. with ethanolamine	Not (publicly) available	C&L notification
292-216-9	90583-18-9	Sulfuric acid, mono-C12-14-alkyl esters, compds. with triethanolamine	Not (publicly) available	C&L notification
292-217-4	90583-19-0	Sulfuric acid, mono-C8-14-alkyl esters, lithium salts	Not (publicly) available	C&L notification
292-222-1	90583-23-6	Sulfuric acid, mono-C12-14-alkyl esters, magnesium salts	e.g. 	Full, not (publicly) available
292-231-0	90583-31-6	Sulfuric acid, mono(C14-18 and C18-unsatd. alkyl) esters, sodium salts	Not (publicly) available	Not registered
292-758-6	90989-98-3	Coconut oil, sulfated, ammonium salt	Not (publicly) available	Not registered
293-916-7	91648-54-3	Sulfuric acid, mono-C14-16-alkyl esters, sodium salts	Not (publicly) available	C&L notification
293-917-2	91648-55-4	Sulfuric acid, mono-C16-20-alkyl esters, sodium salts	Not (publicly) available	Cease manufacture
295-100-6	91783-22-1	Sulfuric acid, mono-C12-13-alkyl esters, potassium salts	Not (publicly) available	Not registered
295-101-1	91783-23-2	Sulfuric acid, mono-C12-13-alkyl esters, sodium salts	Not (publicly) available	C&L notification

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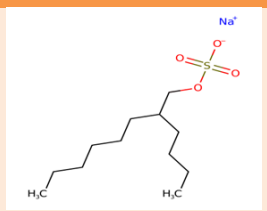
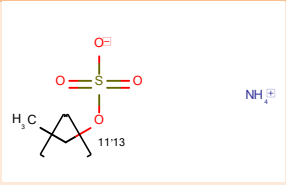
303-553-9	94200-74-5	Sodium 2-butyloctyl sulphate		Full, not (publicly) available
306-271-4	96690-74-3	Sulfuric acid, mono-C8-14-alkyl esters, ammonium salts, compds. with triethanolamine	Not (publicly) available	C&L notification
608-555-6	30913-03-2	1-Docosanol, 1-(hydrogen sulfate)	Not (publicly) available	Not registered
680-793-3	1231880-35-5	Sulfuric acid, mono (C12-13-branched and linear alkyl) esters, sodium salts	Not (publicly) available	C&L notification
805-954-9	1394155-71-5	Sulfuric acid, mono(C16-18 and C18-unsatd. alkyl) esters, sodium salts	Not (publicly) available	C&L notification
870-766-6	1268005-68-0	Not (publicly) available	Not (publicly) available	C&L notification
931-558-1	90583-11-2	Sulfuric acid, mono-C12-14(even numbered)-alkyl esters, ammonium salts		Full, >1000
931-974-3	1231880-35-5	Sulfuric acid, mono(C12-13-branched and linear alkyl) esters, sodium salts	UVCB	Full, >1000
939-262-4	85665-45-8	Sulfuric acid, mono-C8-14-alkyl esters, compds. with triethanolamine	UVCB	Full, not (publicly) available
939-265-0	90583-18-9	Sulfuric acid, mono-C12-14 (even numbered)-alkyl	e.g.	Full, 100-1000

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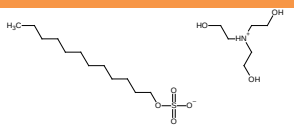
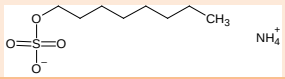
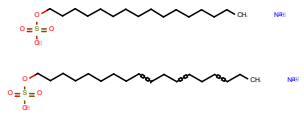
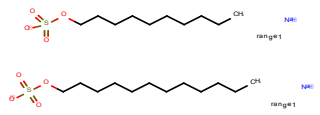
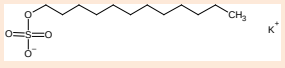
		esters, compds. with triethanolamine		
939-291-2	90583-10-1	Sulfuric acid, mono-C8-14-alkyl esters, ammonium salts	e.g. 	Full, not (publicly) available
939-331-9	1394155-71-5	Sulfuric acid, mono(C16-18 and C18-unsatd. alkyl) esters, sodium salts	e.g. 	Full, not (publicly) available
Not (publicly) available **[X1]**	85338-42-7	Sulfuric acid, mono-C8-10-alkyl esters, sodium salts	Not (publicly) available	Full, not (publicly) available
939-408-7	85049-86-1	Sulfuric acid, C10-12 (even numbered)-alkyl esters, sodium salts		Full, 100-1000
939-412-9	85586-38-5	Sulfuric acid, mono-C8-18-alkyl esters, magnesium salts, compds. with triethanolamine	UVCB	Full, not (publicly) available
939-606-3	96690-74-3	Sulfuric acid, mono-C8-14-alkyl esters, ammonium salts, compds. with triethanolamine	UVCB	Full, not (publicly) available
939-693-8	1268005-68-0	Sulfuric acid, mono-C12-14-alkyl esters, potassium salts	e.g. 	Full, not (publicly) available
942-322-2	-	Sulfuric acid, mono-C12-14 (even	e.g.	Full, 100-1000

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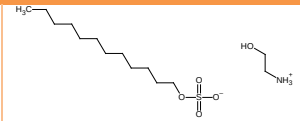
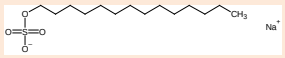
		numbered)-alkyl esters, compds. with ethanolamine		
943-502-3	91648-54-3	Sulfuric acid, mono-C14-16-alkyl esters, sodium salts	e.g. 	Full, not (publicly) available
944-243-9	2156595-44-5	Sulfuric acid, mono-C8-12-alkyl esters, sodium salts	UVCB	Full, not (publicly) available
944-399-8	-	Sulfuric acid, C16-C18 (even numbered) alkyl esters, sodium salts and C16-18 (even numbered) alcohols	UVCB	Cease manufacture
944-459-3	85681-66-9	Sulfuric acid, mono-C12-14-alkyl esters, compds. with isopropanolamine	UVCB	Full, not (publicly) available
946-091-9	-	Reaction mass of ammonium dodecyl sulfate, ammonium tetradecyl sulfate and ammonium alkoxy-alkyl sulfate	UVCB	Full, not (publicly) available
Not (publicly) available **[X2]**	-	Reaction products of long-chain fatty alcohols and inorganic acid with 2-aminoalkanol	Not (publicly) available	Full, not (publicly) available
947-329-4	-	sulfuric acids, C9-11-iso-C10 rich, alkyl esters, sodium salt	UVCB	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.

Note: Two substances in this group have confidential EC/List numbers and were labelled as X1 and X2 respectively. These labels might not appear in sequence in the report.

Note: In the group there are substances which have different EC/List numbers, but which are reported to have the same CAS number. Further checks are needed to verify if the EC/List numbers would be duplicate numbers for the same substance.

Contents

DISCLAIMER

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

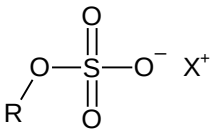
Glossary

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 the aliphatic sulfate monoester moiety shown in the figure below.



X^+ = H^+; Na^+; K^+; Mg^{2+}; Li^+; Zn^{2+}; NH_4^+; other ion (mainly from ethanolamine or triethanolamine)

R = aliphatic alkyl group, C01–C22, linear/branched, saturated/unsaturated

The group includes 77 substances, of which 36 have a full registration. For 3 substances there has been cease of manufacture, and the rest are not registered (some have C&L notifications). The group includes mono-constituent, multi-constituent and UVCB substances.

Based on information reported in the REACH registration dossiers, the substances are widely used across 33 product categories, such as washing and cleaning products (PC 35), cosmetics, personal care products (PC 39), adhesives, sealants (PC 1), coatings and paints, thinners, paint removers (PC 9a), fillers, putties, plasters, modelling clay (PC 9b), lubricants, greases, release products (PC 24), leather treatment products (PC 23), biocidal products (PC 8), textile dyes, and impregnating products (PC 34), to name a few. All substances in the group have surface active properties, therefore they function almost exclusively as surfactants or provide similar function, in mixtures and articles, where surface active properties are expected or are necessary. Many substances from this group are also used as laboratory chemicals and intermediates. Overall exposure to humans and release in the environment is expected for most substances in the group.

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

Subgroup name, EC/List no, substance name	Human Health Hazard	Environmental Hazard	Relevant use(s) & exposure potential	Suggested regulatory actions
Subgroup 1 218-058-2 292-217-4	Known or potential hazard for reproductive toxicity	No hazard or unlikely hazard	EC 218-058-2 has high exposure potential for professional and consumer uses in washing and cleaning products. EC 292-217-4 is not registered and hence exposure is considered not relevant.	**CLH** Justification: Due to the intrinsic Repr. 1A property of the lithium ion and little or no contribution from the counterions, a group CLH is proposed to cover both substances, preferably with other lithium salts
Subgroup 2 931-558-1 931-974-3	No hazard or unlikely hazard	No hazard or unlikely hazard	Wide use pattern as a constituent of washing and cleaning products, which are used both by professional users	**First step: CCH** **Potential last action:** **Currently no need for EU RRM**

Subgroup name, EC/List no, substance name	Human Health Hazard	Environmental Hazard	Relevant use(s) & exposure potential	Suggested regulatory actions
273-258-7 939-265-0 939-331-9			and consumers, used in cosmetics, personal care products, adhesives, sealants, air care products, used by professional and consumer users, also in fertilisers, coatings and paints, thinners, paint removers, fillers, patties, plasters, modelling clay by consumer users. In addition, in textile dyes, and impregnating products incorporated in articles and consumer uses.	Justification: Overall, no or unlikely hazard that would lead to concern for the reported uses.
Subgroup 3 204-812-8 205-535-5 205-568-5 205-788-1	No hazard or unlikely hazard	No hazard or unlikely hazard	Wide use pattern as constituents of washing and cleaning products, which are used both by professional users and consumers, used in cosmetics, personal care	**No action** **Potential last action:** **Currently no need for EU RRM** Justification:

Subgroup name, EC/List no, substance name	Human Health Hazard	Environmental Hazard	Relevant use(s) & exposure potential	Suggested regulatory actions
208-142-7 214-002-6 225-190-4 244-955-3 249-655-6 250-796-0 273-257-1 274-625-4 277-362-3 282-968-6 287-809-4 292-222-1 293-917-2 303-553-9 939-262-4 939-291-2 939-408-7			products, adhesives, sealants, air care products, used by professional and consumer users, also in fertilisers, coatings and paints, thinners, paint removers, fillers, patties, plasters, modelling clay by consumer users. In addition, in textile dyes, and impregnating products incorporated in articles and consumer uses.	Overall, no or unlikely hazard that would lead to concern for the reported uses.

Subgroup name, EC/List no, substance name	Human Health Hazard	Environmental Hazard	Relevant use(s) & exposure potential	Suggested regulatory actions
939-412-9 939-606-3 939-693-8 942-322-2 943-502-3 944-243-9 944-399-8 944-459-3 946-091-9 947-329-4 Substance X1 Substance X2				

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

Based on currently available information, there is a need for EU regulatory risk management – harmonised classification for reproductive toxicity hazards due to the potential for exposure of the substances ECs 218-058-2 and 292-217-4 in the group.

These two substances are monoesters with lithium as counterion. ECHA's Risk Assessment Committee (RAC) has recently adopted its opinion[5] regarding the harmonised classification of three lithium salts (lithium content ranging from 9% to 29% w/w) under the CLP Regulation for their reproductive toxic properties. The classification is based on the intrinsic properties of the lithium cation.

Although there are no studies on reproductive/developmental toxicity of ECs 218-058-2 and 292-217-4, it is suggested to look at the possibility to classify all lithium salts substances together on the basis of the toxicity of the lithium cation rather than going one by one, to ensure that all the relevant known and future substances would be classified as reprotoxic.

As the lithium cation is considered responsible for the systemic toxicity of simple lithium compounds, a grouping approach for harmonised classification was earlier recommended in the assessment of regulatory needs on simple lithium compounds. Although the lithium content of ECs 218-058-2 and 292-217-4 is lower than in the simple lithium compounds, it is suggested that the same approach is followed for ECs 218-058-2 (Li content ca. 2.6 % (w/w)[6]) and 292-217-4 (Li content on average ca. 2.7 % (w/w)[7]) since the generic concentration limit for classification of mixtures containing a substance, which is classified as Repr. 1A or Repr. 1B, is 0.3 % (w/w).

The use of Note 1 in Annex VI to CLP could be considered for addressing the classification of mixtures containing these substances ("*The concentration stated or, in the absence of such concentrations, the generic concentrations set out in this Regulation are the percentages by weight of the metallic element calculated with reference to the total weight of the mixture.*").

A harmonised classification as Repr. 1A i) i) will require company level risk management measures (RMM) for workers to be in place, ii) is needed or highly recommended in support of further regulatory processes under REACH, and iii) would lead to generic restriction of the substance(s) in consumer mixtures by means of restriction entry 30.

[5] https://echa.europa.eu/registry-of-clh-intentions-until-outcome/-/dislist/details/0b0236e18270066e

[6] Calculated based on the molecular formula $C_{12}H_{25}LiO_4S$

[7] Calculated average based on molecular formulas between $C_8H_{17}LiO_4S$ and $C_{14}H_{29}LiO_4S$ expected for constituents of "Sulfuric acid, mono-C8-14-alkyl esters, lithium salts" for which the calculated Li contents would be ca. 3.2 %(w/w) and ca. 2.3 %(w/w), respectively.

Further RRM to limit worker exposure to ECs 218-058-2 and 292-217-4 should be considered when considering further RRM after CLH on the larger group of lithium salts.

Based on currently available information, there is no need for (further) EU regulatory risk management for all substances in the group, except the two lithium containing substances listed above (EC 218-058-2, 292-217-4).

Based on ECHA's assessment of hazard information currently available in the registration dossiers the following human health hazard: **skin sensitisation** is identified for one substance (List 939-412-9). Self classification has been applied based on positive skin sensitisation data in one study in the registration dossier. It is noted that there seems to be some unclarity on the composition of the test material in that study. List 939-412-9 is a UVCB, and it is likely that the skin sensitising effect does not come from aliphatic sulfate moiety. Skin sensitisation test data is available on 11 other members of the group, all showing negative results. Therefore, skin sensitisation is considered unlikely for all substances in the group, except List 939-412-9.

No additional potential hazards were identified for human health. These conclusions are based on available repeated dose, mutagenicity, reproductive and developmental toxicity screening studies, none of them indicating hazardous effects, including endocrine-mediated effects for the substances of the group. Based on the repeated dose and mutagenicity study data, there are no indications of target organ effects or carcinogenicity potential. These conclusions could be extrapolated to other group members with no data available, based on common structural features. The lack of toxicity is supported by previous work, e.g. OECD SIDS on Alkyl Sulfates, Alkane Sulfonates and α-Olefin Sulfonates, where no evident CMR/ED concern was identified.

The counterions ethanolamine and triethanolamine have been assessed under substance evaluation, and were concluded as unlikely CMR/ED. ECHA's previous assessments on the other inorganic counterions did not identify CMR/ED concerns. Variations in alkyl chain types or length (>C8) are not expected to have an impact on toxicity. Three of the substances (EC 208-142-7, 249-655-6, 250-796-0) have short carbon chains (C1-C2). Substance-specific data on skin sensitisation, mutagenicity and reproductive toxicity are available on these substances, showing no hazards.

There is no evidence that any of the substances would be endocrine disrupters for humans or the wildlife (no evidence from the literature or from structural alerts).

None of the substances in the group are expected to be persistent. All substances but EC 250-796-0 are readily biodegradable. It is not clear why EC 250-796-0 was not rapidly mineralised. As it consists of relatively small molecules (C2 chains), the theoretical oxygen demand or theoretical CO_2 production is low, which may explain the low mineralisation rate observed. However, substances with a C1 chain (EC 208-142-7 and EC 249-655-6) were observed to be readily biodegradable. Based on the information available on other alkyl sulfates, EC 250-796-0 is not expected to be P/vP. It is not expected to be B/vB or T either.
Most of the substances of this group are expected to have only moderate aquatic toxicity. They are mostly either classified as Aquatic Chronic 3 or not classified for aquatic toxicity. The aquatic toxicity seems to be mainly driven by the carbon chain length and the toxicity of the counter-ion. The highest baseline toxicity was observed for substances with a high proportion of constituents with a C14 carbon chain length in their compositions (e.g. List 943-502-3 which is classified as Aquatic Acute 1 and Aquatic Chronic 2). The aquatic toxicity of EC 244-955-3 (classified as

Aquatic Acute 1 and Aquatic Chronic 3) probably reflects the toxicity of the counter-ion (Zn^{2+}). The characteristics of the carbon chain, i.e. presence of branching, saturated vs. unsaturated, may also impact the aquatic toxicity of those substances. Most counter-ions in this group are not expected to be toxic (e.g. Na^{+}, K^{+}), but some may still be a concern for the aquatic life (e.g. Zn^{2+}, NH_4^{+}).

Compliance check is proposed for the following substances:

- ECs/Lists 273-258-7, 931-558-1, 931-974-3, 939-265-0, 939-331-9

to clarify no/unlikely hazard for human health and environment.

Annex 1: Overview of classifications

Data extracted on 3 March 2023.

EC / List No	CAS No	Substance name	Harmonised classification	Classification in registrations
204-812-8	126-92-1	sodium etasulfate	-	Flam. Solid 1 H228 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract
205-380-3	139-88-8	sodium tetradecyl sulfate	-	-
205-535-5	142-31-4	sodium octyl sulphate	-	Flam. Solid 1 H228 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract
205-568-5	142-87-0	sodium decyl sulphate	-	Flam. Solid 1 H228 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: Respiratory tract Aquatic Chronic 3 H412
205-788-1	151-21-3	sodium dodecyl sulphate	-	Flam. Solid 2 H228 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract Aquatic Chronic 3 H412
208-142-7	512-42-5	sodium methyl sulphate	-	Eye Irrit. 2 H319

EC / List No	CAS No	Substance name	Harmonised classification	Classification in registrations
214-002-6	1072-15-7	sodium nonyl sulphate	-	Flam. Solid 1 H228 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: Respiratory tract
214-292-4	1120-01-0	sodium hexadecyl sulphate	-	-
214-295-0	1120-04-3	sodium octadecyl sulphate	-	-
214-737-2	1191-50-0	sodium tetradecyl sulphate	-	-
218-058-2	2044-56-6	lithium dodecyl sulphate	-	STOT Single Exp. 3 H335, affected organs: respiratory tract [Article 10 (inactive)] Aquatic Chronic 3 H412 [Article 10 (inactive)] Acute Tox. 4 H332 [Article 10 (inactive)] Eye Damage 1 H318, specific concentration: >=20 [Article 10 (inactive)] Skin Irrit. 2 H315 [Article 10 (inactive)] Acute Tox. 4 H302 [Article 10 (inactive)] Flam. Solid 1 H228 [Article 10 (inactive)]
221-188-2	3026-63-9	sodium tridecyl sulphate	-	-
225-190-4	4706-78-9	potassium dodecyl sulphate	-	-

EC / List No	CAS No	Substance name	Harmonised classification	Classification in registrations
236-125-4	13177-49-6	sodium icosyl sulphate	-	-
236-475-8	13393-71-0	sodium pentadecyl sulphate	-	-
244-955-3	22397-58-6	zinc dodecyl hydrogen disulphate	-	Flam. Solid 1 H228 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 Aquatic Acute 1 H400 STOT Single Exp. 3 H335, affected organs: respiratory tract Aquatic Chronic 3 H412
249-655-6	29463-06-7	tris(2-hydroxyethyl)methylammonium methyl sulphate	-	-
250-796-0	31774-90-0	ethyltris(2-hydroxyethyl)ammonium ethyl sulphate	-	-
268-364-5	68081-96-9	Sulfuric acid, mono-C10-16-alkyl esters, ammonium salts	-	-
268-365-0	68081-97-0	Sulfuric acid, mono-C10-16-alkyl esters, magnesium salts	-	-

EC / List No	CAS No	Substance name	Harmonised classification	Classification in registrations
268-366-6	68081-98-1	Sulfuric acid, mono-C14-18-alkyl esters, sodium salts	-	-
271-557-7	68585-47-7	Sulfuric acid, mono-C10-16-alkyl esters, sodium salts	-	-
272-575-8	68890-70-0	Sulfuric acid, mono-C12-15-alkyl esters, sodium salts	-	-
273-257-1	68955-19-1	Sulfuric acid, mono-C12-18-alkyl esters, sodium salts	-	Flam. Solid 2 H228 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract Aquatic Chronic 3 H412
273-258-7	68955-20-4	Sulfuric acid, mono-C16-18-alkyl esters, sodium salts	-	Flam. Solid 2 H228 Skin Irrit. 2 H315, specific concentration: >55 Eye Damage 1 H318, specific concentration: >55 STOT Single Exp. 3 H335, affected organs: respiratory tract, specific concentration: >55 Aquatic Chronic 3 H412
274-625-4	70495-37-3	ammonium 2-ethylhexyl sulphate	-	Skin Corr. 1A H314 Eye Damage 1 H318

EC / List No	CAS No	Substance name	Harmonised classification	Classification in registrations
277-362-3	73296-89-6	Sulfuric acid, mono-C12-16-alkyl esters, sodium salts	-	Flam. Solid 1 H228 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract Aquatic Chronic 3 H412
282-968-6	84501-49-5	Sulfuric acid, mono-C9-11-alkyl esters, sodium salts	-	Flam. Solid 1 H228 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: Respiratory tract Aquatic Chronic 3 H412
285-260-5	85049-86-1	Sulfuric acid, mono-C10-12-alkyl esters, sodium salts	-	-
286-718-7	85338-42-7	Sulfuric acid, mono-C8-10-alkyl esters, sodium salts	-	-
287-809-4	85586-07-8	Sulfuric acid, mono-C12-14-alkyl esters, sodium salts	-	Flam. Solid 1 H228 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract Aquatic Chronic 3 H412
287-840-3	85586-38-5	Sulfuric acid, mono-C8-	-	-

EC / List No	CAS No	Substance name	Harmonised classification	Classification in registrations
		18-alkyl esters, magnesium salts, compds. with triethanolamine		
288-134-8	85665-45-8	Sulfuric acid, mono-C8-14-alkyl esters, compds. with triethanolamine	-	-
288-206-9	85681-68-1	Sulfuric acid, mono(C14-18 and C16-18-unsatd. alkyl) esters, sodium salts	-	-
292-208-5	90583-10-1	Sulfuric acid, mono-C8-14-alkyl esters, ammonium salts	-	-
292-209-0	90583-11-2	Sulfuric acid, mono-C12-14-alkyl esters, ammonium salts	-	-

EC / List No	CAS No	Substance name	Harmonised classification	Classification in registrations
292-210-6	90583-12-3	Sulfuric acid, mono-C12-16-alkyl esters, ammonium salts	-	-
292-214-8	90583-16-7	Sulfuric acid, mono-C12-14-alkyl esters, compds. with ethanolamine	-	-
292-216-9	90583-18-9	Sulfuric acid, mono-C12-14-alkyl esters, compds. with triethanolamine	-	-
292-217-4	90583-19-0	Sulfuric acid, mono-C8-14-alkyl esters, lithium salts	-	-
292-222-1	90583-23-6	Sulfuric acid, mono-C12-14-alkyl esters, magnesium salts	-	Flam. Solid 1 H228 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318 STOT Single Exp. 3 H335, affected organs: Respiratory tract Aquatic Chronic 3 H412
293-916-7	91648-54-3	Sulfuric acid,	-	-

EC / List No	CAS No	Substance name	Harmonised classification	Classification in registrations
		mono-C14-16-alkyl esters, sodium salts		
293-917-2	91648-55-4	Sulfuric acid, mono-C16-20-alkyl esters, sodium salts	-	Skin Irrit. 2 H315, specific concentration: >55 [Article 10 (inactive)] Flam. Solid 1 H228 [Article 10 (inactive)] STOT Single Exp. 3 H335, affected organs: Respiratory tract [Article 10 (inactive)] Eye Damage 1 H318, specific concentration: >55 [Article 10 (inactive)] Aquatic Chronic 3 H412 [Article 10 (inactive)]
295-101-1	91783-23-2	Sulfuric acid, mono-C12-13-alkyl esters, sodium salts	-	-
303-553-9	94200-74-5	sodium 2-butyloctyl sulphate	-	Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract Aquatic Chronic 3 H412
306-271-4	96690-74-3	Sulfuric acid, mono-C8-14-alkyl esters, ammonium salts, compds. with	-	-

EC / List No	CAS No	Substance name	Harmonised classification	Classification in registrations
		triethanolamine		
680-793-3	123188-80-35-5	Sulfuric acid, mono (C12-13-branched and linear alkyl) esters, sodium salts	-	-
805-954-9	139415-5-71-5	Sulfuric acid, mono(C16-18 and C18-unsatd. alkyl) esters, sodium salts	-	-
870-766-6	126800-5-68-0	Not (publicly) available	-	-
931-558-1	-	Sulfuric acid, mono-C12-14(even numbered)-alkyl esters, ammonium salts	-	Acute Tox. 4 H302 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 Aquatic Chronic 3 H412
931-974-3	-	Sulfuric acid, mono (C12-13-branched and linear alkyl) esters, sodium salts	-	Acute Tox. 4 H302 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 Aquatic Chronic 3 H412
939-262-4	-	Sulfuric acid, mono-C8-14-alkyl esters, compds.	-	Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20

EC / List No	CAS No	Substance name	Harmonised classification	Classification in registrations
		with triethanolamine		STOT Single Exp. 3 H335, affected organs: respiratory tract Aquatic Chronic 3 H412
939-265-0	-	Sulfuric acid, mono-C12-14 (even numbered) -alkyl esters, compds. with triethanolamine	-	Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract Aquatic Chronic 3 H412
939-291-2	-	Sulfuric acid, mono-C8-14-alkyl esters, ammonium salts	-	Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract Aquatic Chronic 3 H412
939-331-9	-	Sulfuric acid, mono(C16-18 and C18-unsatd. alkyl) esters, sodium salts	-	Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract Aquatic Chronic 3 H412
Substance X1	-	Sulfuric acid, mono-C8-10 (even numbered) -alkyl esters, sodium salts	-	Flam. Solid 1 H228 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: Respiratory tract
939-408-7	-	Sulfuric acid, C10-12 (even	-	Flam. Solid 1 H228 Acute Tox. 4 H302 Acute Tox. 4 H332

EC / List No	CAS No	Substance name	Harmonised classification	Classification in registrations
		numbered) -alkyl esters, sodium salts		Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: Respiratory tract
939-412-9	-	Sulfuric acid, mono-C8-18-alkyl esters, magnesium salts, compds. with triethanolamine	-	Skin Corr. 1B H314 Eye Damage 1 H318 Skin Sens. 1B H317 STOT Single Exp. 3 H335, affected organs: respiratoty tract Aquatic Chronic 3 H412
939-606-3	-	Sulfuric acid, mono-C8-14-alkyl esters, ammonium salts, compds. with triethanolamine	-	Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory irritation Aquatic Chronic 3 H412
939-693-8	-	Sulfuric acid, mono-C12-14-alkyl esters, potassium salts	-	Flam. Solid 1 H228 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract Aquatic Chronic 3 H412
942-322-2	-	Sulfuric acid, mono-C12-14 (even numbered) -alkyl esters, compds. with ethanolamine	-	Flam. Solid 1 H228 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract Aquatic Chronic 3 H412

EC / List No	CAS No	Substance name	Harmonised classification	Classification in registrations
943-502-3	-	Sulfuric acid, mono-C14-16-alkyl esters, sodium salts	-	Flam. Solid 1 H228 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 Aquatic Acute 1 H400 STOT Single Exp. 3 H335, affected organs: Respiratory tract Aquatic Chronic 2 H411
944-243-9	-	Sulfuric acid, mono-C9-12-alkyl esters, sodium salts	-	Flam. Solid 1 H228 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract
944-399-8	-	Sulfuric acid, C16-C18 (even numbered) alkyl esters, sodium salts and C16-18 (even numbered) alcohols	-	Aquatic Chronic 3 H412 [Article 10 (inactive)]
944-459-3	-	Sulfuric acid, mono-C12-14-alkyl esters, compds. with isopropanolamine	-	Flam. Solid 1 H228 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 STOT Single Exp. 3 H335, affected organs: respiratory tract Aquatic Chronic 3 H412
946-091-9	-	Reaction mass of ammonium dodecyl sulfate, ammonium tetradecyl sulfate and ammonium	-	Flam. Solid 1 H228 Skin Irrit. 2 H315 Eye Damage 1 H318

EC / List No	CAS No	Substance name	Harmonised classification	Classification in registrations
		alkoxy-alkyl sulfate		
Substance X2	-	Reaction products of long-chain fatty alcohols and inorganic acid with 2-aminoalkanol	-	Eye Irrit. 2 H319
947-329-4	-	sulfuric acids, C9-11-iso-C10 rich, alkyl esters, sodium salt	-	Acute Tox. 4 H302 Skin Irrit. 2 H315 Eye Damage 1 H318, specific concentration: >=20 Aquatic Chronic 3 H412

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

Data extracted on 03/03/2023

Main types of applications structured by product or article types	204-812-8	205-535-5	205-568-5	205-788-1	208-142-7	214-002-6	218-058-2	225-190-4	244-955-3	249-655-6	250-796-0	273-257-1	273-258-7	274-625-4	277-362-3	282-968-6	287-809-4	292-222-1	293-917-2	303-553-9	931-558-1	931-974-3	939-262-4	939-265-0	939-291-2	939-331-9	Substance X1	939-408-7	939-412-9	939-606-3	939-693-8	942-322-2	943-502-3	944-243-9	944-399-8	944-459-3	946-091-9	Substance X 2	947-329-4
PC 12: Fertilisers	i			f, p, c								f, p, c			f, i, p, c	f, p, c	f, p, c			c	c												f, p, c	f, p, c					
PC 27: Plant protection products	p, c			f, i, p, c								i, p, c			i, p, c	p, c	f, i, p, c			c													p, c	p, c					
PC 35: Washing and cleaning products	f, i, p, c	f, i, p, c	f, i, p, c	f, i, p, c		f, i, p, c	f, p, c	f				f, i, p, c			f, i, p, c	f, i, p, c	f, i, p, c, a	i, c		i, p, c	f, i, p, c	f, i, p, c	i	f, i, p, c	i, p, c		f, i, p, c				f, i, p, c	f, i, p, c	i					
PC 39: Cosmetics, personal care products	f, p, c	f, p, c	p, c	f, i, p, c		p, c			f, p, c			f, p, c	f, c		f, p, c	p, c	f, i, p, c	i, p, c		c	f, p, c	f, p, c		f, p, c	f, p, c		p			f, c	f, p, c	f, p, c			f, c	p, c		
PC 4: Anti-freeze and de-icing products	c											c					i, p, c			p, c							c											

Main types of applications structured by product or article types	204-812-8	205-535-5	205-568-5	205-788-1	208-142-7	214-002-6	218-058-2	225-190-4	244-955-3	249-655-6	250-796-0	273-257-1	273-258-7	274-625-4	277-362-3	282-968-6	287-809-4	292-222-1	293-917-2	303-553-9	931-558-1	931-974-3	939-262-4	939-265-0	939-291-2	939-331-9	Substance X1	939-408-7	939-412-9	939-606-3	939-693-8	942-322-2	943-502-3	944-243-9	944-399-8	944-459-3	946-091-9	Substance X 2	947-329-4
PC 1: Adhesives, sealants	f, i, p	f, i, p, c	f, i, p, c	f, p, c								i, c			c	f, i, p, c	f, i, p, c				i, c	f, i, p, c	i	i	i			f, i, p		c			i	f, i, p, c	i					f, i, p, c
PC 3: Air care products	C	c	c	f, c		c						c			c	c	f, i, p, c			c	p, c	c		c	c		c				c	c	c						
PC 9a: Coatings and paints, thinners, paint removes	f, i, p, c	f, i, p, c	f, i, p, c	f, i, p, c		i				i		f, i, p, c			f, i, c	i	f, i, p, c			i, p, c	f, i, c	i		f, i, p, c			i, p, c		c		i	f, i, p, c	i	f, i, p, c					f, i, p, c, a
PC 9b: Fillers, putties, plasters, modelling clay	i, c	f, i, p, c	f, i, p, c	f, p, c		i						i, c			i, c	i, c	f, i, p, c			c	i, c	i		i, c			i	c	c		i	i, c	p	c					p, c
PC 9c: Finger paint	c	c										c					f, i, p, c			c				c							c		c						c
PC 24: Lubricants, greases, release products	f, i	f, i	f, i			f, i		f				f, i, p, c			i	i	f, i, p, c			f, i, c	f, i	f, i	f, i	f, i			i				i	f, i	i	f, i, p, c				f, i	i

Main types of applications structured by product or article types	204-812-8	205-535-5	205-568-5	205-788-1	208-142-7	214-002-6	218-058-2	225-190-4	244-955-3	249-655-6	250-796-0	273-257-1	273-258-7	274-625-4	277-362-3	282-968-6	287-809-4	292-222-1	293-917-2	303-553-9	931-558-1	931-974-3	939-262-4	939-265-0	939-291-2	939-331-9	Substance X1	939-408-7	939-412-9	939-606-3	939-693-8	942-322-2	943-502-3	944-243-9	944-399-8	944-459-3	946-091-9	Substance X 2	947-329-4
PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents	f, i	f, i	f, i	i, p						f, i		f, i					f, i, c			f, i	f, i	f, i	f, i	f, i							f, i			f, i				
PC 36: Water softeners	c	c	c			c						c			c	c	c				c	c		c			c				c	c						
PC 37: Water treatment chemicals	i, p, c	i	i	i		i						i, c			i	i	i, p, c			f, i, p	i	i		f, i			i, p				i	i						
PC 2: Adsorbents	f	f	f			f																		f	f						f							
PC 11: Explosives																	p			p																		
PC 8: Biocidal products (e.g. disinfectants, pest control)	i, p, c	i, p, c	i, p, c	f, i, p, c		i, p, c				i		i, p, c			i, p, c	i, p, c	f, i, p, c			i, c	i, p, c	i, p, c	i	i, p, c			f, i, p, c				i, p, c	i, p, c	c	i				
PC 28: Perfumes, fragrances	c	c	c	f, c		c						f, c			f, c	c	f, c			c	f, c	c		c							c	c						
PC 29: Pharmaceu	i, p	i, p	i, p	i, p		i, p						i, p			i, p	i, p	i, p				i, p	i, p		f, i,							i, p	i, p						

Main types of applications structured by product or article types	204-812-8	205-535-5	205-568-5	205-788-1	208-142-7	214-002-6	218-058-2	225-190-4	244-955-3	249-655-6	250-796-0	273-257-1	273-258-7	274-625-4	277-362-3	282-968-6	287-809-4	292-222-1	293-917-2	303-553-9	931-558-1	931-974-3	939-262-4	939-265-0	939-291-2	939-331-9	Substance X1	939-408-7	939-412-9	939-606-3	939-693-8	942-322-2	943-502-3	944-243-9	944-399-8	944-459-3	946-091-9	Substance X 2	947-329-4
ticals																								p															
PC 31: Polishes and wax blends	p, c	p, c	p, c	f, p, c		p, c						f, i, p, c			p, c	p, c	i, p, c			c	p, c	p, c		p, c	c		f, p, c				p, c	p, c	p, c						
PC 15: Non-metal-surface treatment products											f, i	c					i, c			c					i														
PC 25: Metal working fluids	i	i	i			i						f, i, p			i	i	f, i, p			i, p, c	i	i		i			i				i	i		f, i, p					
PC 16: Heat transfer fluids																	f, i, p, c			c																		
PC 17: Hydraulic fluids																	f, i, p, c			i, p, c																		
PC 13: Fuels												f, i, p, c					f, i, p, c			i, p, c																		

Main types of applications structured by product or article types	204-812-8	205-535-5	205-568-5	205-788-1	208-142-7	214-002-6	218-058-2	225-190-4	244-955-3	249-655-6	250-796-0	273-257-1	273-258-7	274-625-4	277-362-3	282-968-6	287-809-4	292-222-1	293-917-2	303-553-9	931-558-1	931-974-3	939-262-4	939-265-0	939-291-2	939-331-9	Substance X1	939-408-7	939-412-9	939-606-3	939-693-8	942-322-2	943-502-3	944-243-9	944-399-8	944-459-3	946-091-9	Substance X 2	947-329-4
PC 32: Polymer preparations and compounds	f, i	f, i	f, i	f, i, p, c, a						f, i		f, i			f, i	f, i	f, i, p, c, a			i, p	f, i	f, i	f, i	f, i		f, i					f, i	f, i	f, i					f, i
PC 18: Ink and toners	f, i, p	f, i, p	i	f, i, c, a		i				i		f, i, p, c			i	i	f, i, p, c			i	i	i	i	f, i, p						i	f, i, p		f, i, p					f, i, p
PC 26: Paper and board treatment products				a													i, p, c				i																f, i, a	
PC 34: Textile dyes, and impregnating products	f, i, a	f, i, a	f, i, a							f, i, a		f, i, c, a		f, i, a			f, i, c, a			f, i, c, a	f, i, c, a	f, i, a	f, i	f, i, a	f	f, i					f, i, a	i, a	f, i, a					i, a
PC 23: Leather treatment products	f, i, p, c	f, i, p, c	f, i, p, c			p, c						f, i, p, c, a			p, c	p, c	f, i, p, c, a			f, i, c	f, i, p, c	f, i, p, c	f, i, p, c	i	f, i, p, c		c				p, c	f, i, p, c	i	f, i		f, a	f, i	i
PC 14: Metal	i	i	i	i		i						i, c			i	i	f, i,				i	i		i	i		f, i,				i	i	i					

Main types of applications structured by product or article types	204-812-8	205-535-5	205-568-5	205-788-1	208-142-7	214-002-6	218-058-2	225-190-4	244-955-3	249-655-6	250-796-0	273-257-1	273-258-7	274-625-4	277-362-3	282-968-6	287-809-4	292-222-1	293-917-2	303-553-9	931-558-1	931-974-3	939-262-4	939-265-0	939-291-2	939-331-9	Substance X1	939-408-7	939-412-9	939-606-3	939-693-8	942-322-2	943-502-3	944-243-9	944-399-8	944-459-3	946-091-9	Substance X 2	947-329-4
surface treatment products																	p, c										p												
PC 21: Laboratory chemicals	f, i, p	f, i, p	f, i, p	f, i, p		f, i, p	i					f, i, p, c			f, i, p	f, i, p	f, i, p	f		f, i, p	f, i, p	f, i, p		f, i, p	i, p		f				f, i, p	f, i, p		f				
PC 19: Intermediate	i	i	i	i	i							i, p			i	i	i, p			i	i, p	i		i		i						i	i	i					i

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

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