Assessment of regulatory needs

Authority: European Chemicals Agency (ECHA)

Group Name: Complex inorganics from metallurgy

General structure: -

Revision history

Version	*Date*	*Description*
1.0	2 April 2024	

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]
265-996-3	65996-65-8	Iron ores, agglomerates	Full, > 1000
265-997-9	65996-66-9	Iron sinter	Full, > 1000
266-005-7	65996-72-7	Dust, steelmaking	Full, not (publicly available)
266-006-2	65996-73-8	Slimes and Sludges, blast furnace and steelmaking	Full, > 1000
266-007-8	65996-74-9	Mill scale (ferrous metal)	Full, > 1000
266-966-2	67711-90-4	Flue dust, copper-refining	Full, > 1000
266-967-8	67711-91-5	Matte, copper	Full, > 1000
266-972-5	67711-95-9	Slimes and Sludges, copper electrolytic	Full, > 1000
273-694-8	69011-50-3	Zinc, dross	OSII or TII
273-695-3	69011-52-5	Tin, dross	OSII or TII
273-701-4	69011-60-5	Lead alloy, base, Pb,Sn, dross	Full, not (publicly available)
273-707-7	69011-69-4	Cadmium, dross	OSII or TII
273-721-3	69012-21-1	Wastewater, cadmium sulfate electrolytic, acid	OSII or TII
273-723-4	69012-24-4	Wastewater, zinc sulfate electrolytic, acid	Full, > 1000
273-742-8	69012-43-7	Slimes and Sludges, zinc sulfate electrolytic	OSII or TII
273-744-9	69012-45-9	Scale (coating), copper	OSII or TII
273-749-6	69012-50-6	Matte, nickel	Full, not (publicly available)
273-752-2	69012-54-0	Electrolytes, copper-manufg., spent	Full, > 1000
273-760-6	69012-63-1	Flue dust, zinc-refining	OSII or TII

[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]
273-791-5	69029-45-4	Lead, dross, antimony-rich	Full, > 1000
273-792-0	69029-46-5	Lead, dross, bismuth-rich	Full, > 1000
273-793-6	69029-47-6	Dore	Full, > 1000
273-795-7	69029-51-2	Lead, antimonial, dross	Full, not (publicly available)
273-796-2	69029-52-3	Lead, dross	Full, > 1000
273-802-3	69029-60-3	Zinc, desilverizing skims	Full, not (publicly available)
273-809-1	69029-67-0	Flue dust, lead-refining	Full, > 1000
273-836-9	69029-97-6	Speiss, copper	Full, not (publicly available)
273-925-2	69227-11-8	Lead, dross, copper-rich	Full, > 1000
282-356-9	84195-51-7	Matte, lead	Full, > 1000
282-366-3	84195-61-9	Speiss, lead	Full, not (publicly available)
283-659-9	84696-55-9	Tin, melting residues	Full, not (publicly available)
283-928-0	84776-04-5	Tin ores, melting residues, hardhead	OSII or TII
293-314-4	91053-49-5	Leach residues, zinc ore, lead-contg.	Full, > 1000
305-411-1	94551-62-9	Calcines, lead-zinc ore conc.	OSII or TII
305-445-7	94551-99-2	Wastes, lead battery reprocessing	Full, not (publicly available)
305-449-9	94552-05-3	Waste solids, lead silver anode	OSII or TII
308-011-5	97808-88-3	Lead, bullion	Full, > 1000
308-496-3	98072-44-7	Flue dust, precious metal refining	Full, not (publicly available)
308-506-6	98072-52-7	Matte, precious metal	Full, not (publicly available)
308-516-0	98072-61-8	Slimes and Sludges, precious metal refining	Full, > 1000
308-526-5	98072-70-9	Waste solids, precious metal refining	Full, 100-1000
308-765-5	98246-91-4	Speiss, lead, nickel-contg.	Full, not (publicly available)

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]
310-050-8	102110-49-6	Residues, copper-iron-lead-nickel matte, sulfuric acid-insol.	Full, not (publicly available)
310-051-3	102110-50-9	Residues, precious metal refining cementation	Full, 100-1000
310-061-8	102110-60-1	Slimes and Sludges, battery scrap, antimony- and lead-rich	OSII or TII
700-872-9		Elemental tellurium and bismuth concentrate resulting from leaching and cementation	OSII or TII
918-452-0		black copper, copper smelting	Full, not (publicly available)
922-642-9		Cement, purification of copper electrolyte	OSII or TII
922-670-1		Sulfuric Acid, waste gas washing, copper smelting	OSII or TII
927-629-1		residue, nickel matte leaching	Full, > 1000
930-776-4		Silicomanganese manufacturing fumes dedusting solid residues	Full, not (publicly available)
931-506-8		Silver electrolyte	OSII or TII
931-663-2		Materials for reclaim, precious metal production by-products	Full, 100-1000
931-674-2		Materials for reclaim, Precious Metals in Bricks, Pots, Crucibles and trays, etc.	Full, not (publicly available)
931-722-2		Reaction product of lead chloride or lead sulphate with alkaline solution	OSII or TII
933-944-5		Gold electrolyte	OSII or TII
936-276-2		Concentrates of lead and zinc compounds with sulfur resulting from hydrometallurgy (hot acid leaching, super-hot acid leaching and flotation)	Full, not (publicly available)
943-528-5		Precipitate from tellurium containing acid solutions by copper metal cementation	Full, 10-100
948-001-3		sludge, calcine	OSII or TII
948-231-4		Fumes of germanium dioxide, calcium carbonate, iron oxides, sodium chloride and amorphous silica	Full, not (publicly available)

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]
		from smelting of Ge containing residues during germanium refining	
948-652-3		Slimes and sludges, electrolytic refining of tin, lead and silver containing alloy	Full, not (publicly available)
951-951-1		sodium copper sulphate, sodium zinc chloride, zinc sulphate, recovery products from copper and zinc dusts	OSII or TII
951-957-4		arsenic oxides, bismuth iron antimony oxides, sodium aluminium fluoride, zinc sulphate, recovery products from copper and zinc dusts	OSII or TII
951-962-1		lead sulphate, recovery product from copper and zinc dusts	Full, not (publicly available)

This table does not contain group members that are only notified under the CLP Regulation.

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
UVCB	Unknown or variable composition, complex reaction products or of biological materials

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.

The scope of this specific ARN is limited as the assessment of regulatory needs has been defined solely based on the presence of metal compounds which are known or potential CMRs based on harmonised classifications or previous assessments. As the substances in the group consists of metal compounds in variable concentrations and the toxicity of the metals is well known, the related hazard assessment and eventual data generation is not considered to be necessary.

ECHA has grouped together for this assessment complex inorganic substances originating from metallurgical processes excluding slags[5] which have been assessed in a separate ARN[6]. This group consists of the other complex inorganic substances originating from metallurgical processes. This includes for example drosses, mattes, speisses, electrode slimes and electrolyte solutions, dusts, precipitates, residues and ore concentrates (for further information see the table below).

Table 1. Types of substances in the group.

Type	Description
Dore	Silver alloy with other precious metals
Dross	Mass of solid impurities floating on or dispersed in molten low-melting-point metal formed as consequence of oxidation of the metals
Dust	Particulate phase from off gas treatment or cleaning of production facilities
Electrode slime	Solid phase collected from anode
Electrolytic solution	Used solution from electrolysis process
Matte	Molten metal sulphide phases resulting from smelting
Precipitate	Solid phase formed in a solution resulting from the differences in solubility of metal salts
Ore concentrate	Solid phase resulting from removal of commercially worthless material from ore
Residue	Solid phase resulting from leaching
Scale	Flaky solid phase formed on surface of metal sheets or wires resulting from oxidation reactions
Speiss	Heavy metal alloys with arsenic, antimony and tin resulting from smelting

There are 64 substances in the group of which 44 with full registrations and 20 with intermediate registrations. All substances in the group are UVCB type substances.

[5] Slags are stony material separated from metals during smelting or refining ores and recycled metals composed mainly of metal oxides and silicon dioxide. The number of registered slag substances is so large that they were grouped in a group of their own.

[6] https://echa.europa.eu/documents/10162/5e8a767a-68de-d6ec-6c49-d3a0e41b8200

Most of the substances in the group have a self-classification for carcinogenicity and reproductive toxicity (mostly Cat. 1) and many also for mutagenicity (mostly Cat. 2) (see Annex 1). The only substance in the group with harmonised classification for Carc. 1A is 'Matte, nickel' (EC 273-749-6). In most cases the classification is due to presence of lead, arsenic, cadmium and nickel containing compounds in the substances.

Nine substances (EC/List 265-996-3, 265-997-9, 266-005-7, 266-006-2, 266-007-8, 273-694-8, 930-776-4, 933-944-5, and 951-951-1) of the group do not have any (self-)classification for CMR hazards. However, substance List 951-951-1 contains arsenic and cadmium, substance EC 266-007-8 chromium and manganese and List 930-776-4 manganese, which are known to cause C/M/R hazards.

Many lead, cadmium, chromium (VI), nickel and arsenic compounds have harmonised classification[7] due to their carcinogenic/mutagenic/reprotoxic properties. Lead, cadmium and chromium (VI) compounds have been identified as substances of very high concern (SVHCs) under REACH. Indicative or binding occupational exposure limit values have been published for lead, cadmium and chromium[8,9,10]. RAC concluded occupational limit values for lead and its compounds in 2020 and for cadmium and its inorganic compounds in 2021[11].

Based on information reported in the REACH registration dossiers, the substances have industrial and formulation uses as intermediates, base metals and alloys and laboratory chemicals. Some substances have additionally industrial and formulation uses in fertilisers (EC 266-006-2, 266-007-8, 273-723-4), constructions materials (EC 266-005-7, 266-006-2, 266-007-8) and as processing aids (EC 273-694-8, 273-707-7, 273-723-4, 273-760-6, 273-802-3, 293-314-4). Only two substances (EC 266-007-8 and 273-723-4) have professional uses. Professional workers are using EC 273-723-4 only in fertilisers whereas EC 266-007-8 is used by professional workers in fertilisers, water treatment chemicals, fuels, constructions materials, metals and alloys and laboratory chemicals.

[7] Table of harmonised entries in Annex VI to CLP - ECHA (europa.eu)

[8] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31998L0024

[9] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0983

[10] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006L0015

[11] https://echa.europa.eu/rac-opinions-on-scientific-evaluations-of-oels

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 Substance name	Hazard driving regulatory action[12]	Relevant use(s) & exposure potential	Suggested regulatory actions
266-007-8 Mill scale (ferrous metal) 273-723-4 Wastewater, zinc sulfate electrolytic, acid	Known or potential hazard for reproductive toxicity (both substances) for carcinogenicity (273-723-4)	266-007-8: Widespread industrial and professional uses in fertilisers, water treatment chemicals, fuels, constructions materials, and metals and alloys. Potential for exposure for workers and release to environment. 273-723-4: Industrial (formulation) and professional uses in fertilisers.	**Restriction** Justification: The reported professional uses are widespread (at many sites and many users) with relatively low levels of operational controls and risk management measures but with often frequent exposures with a long duration. Restriction of professional uses is preferred over authorisation as it is considered to be more efficient and effective to introduce controls at the

[12] The scope of this specific ARN is limited. The assessment of regulatory needs has been defined solely based on the presence of metals of which compounds are known or potential CMRs, so the hazards indicated here are not necessarily exhaustive. As the substances in the group consist of metal compounds in variable concentrations and the toxicity of the metals is well known, the data generation is not considered to be necessary.

EC / List no Substance name	Hazard driving regulatory action[12]	Relevant use(s) & exposure potential	Suggested regulatory actions
		Potential for exposure for workers and release to environment.	level of placing on the market rather than at the level of uses. Potential exposure from articles needs further investigation, restriction for use in articles to be considered together with the restriction of professional uses
266-966-2 Flue dust, copper-refining 266-972-5 Slimes and Sludges, copper electrolytic 273-695-3 Tin, dross 273-701-4 Lead alloy, base, Pb,Sn, dross 273-707-7 Cadmium, dross 273-721-3 Wastewater, cadmium sulfate electrolytic, acid 273-752-2 Electrolytes, copper-manufg., spent	Known or potential hazard for carcinogenicity for mutagenicity for reproductive toxicity	Industrial (professional) and formulation uses as intermediate, base metals and alloys, laboratory chemicals, and processing aids. Potential for exposure for workers and release to environment.	**Currently no need for EU RRM** <u>Justification</u>: The self-classification will require company level risk management (RMM) to be in place. Therefore, it is proposed that there is currently no need for EU-wide regulatory risk management. Actions may be re-considered if there is a change in the registration status and/or reported uses, when the assessment will be revisited.

EC / List no Substance name	Hazard driving regulatory action[12]	Relevant use(s) & exposure potential	Suggested regulatory actions
273-760-6 Flue dust, zinc-refining 273-796-2 Lead, dross 273-809-1 Flue dust, lead-refining 273-925-2 Lead, dross, copper-rich 282-366-3 Speiss, lead 293-314-4 Leach residues, zinc ore, lead-contg. 308-496-3 Flue dust, precious metal refining 308-516-0 Slimes and Sludges, precious metal refining 310-050-8 Residues, copper-iron-lead-nickel matte, sulfuric acid-insol.			

EC / List no Substance name	Hazard driving regulatory action[12]	Relevant use(s) & exposure potential	Suggested regulatory actions
310-051-3 Residues, precious metal refining cementation 943-528-5 Precipitate from tellurium containing acid solutions by copper metal cementation 951-951-1 sodium copper sulphate, sodium zinc chloride, zinc sulphate, recovery products from copper and zinc dusts			
922-670-1 Sulfuric Acid, waste gas washing, copper smelting 927-629-1 residue, nickel matte leaching	Known or potential hazard for carcinogenicity for mutagenicity		
266-967-8 Matte, copper 273-742-8 Slimes and Sludges, zinc sulfate electrolytic 273-749-6 Matte, nickel	Known or potential hazard for carcinogenicity for reproductive toxicity		

EC / List no Substance name	Hazard driving regulatory action[12]	Relevant use(s) & exposure potential	Suggested regulatory actions
273-791-5 Lead, dross, antimony-rich 273-792-0 Lead, dross, bismuth-rich 273-793-6 Dore 273-795-7 Lead, antimonial, dross 273-802-3 Zinc, desilverizing skims 273-836-9 Speiss, copper 282-356-9 Matte, lead 305-411-1 Calcines, lead-zinc ore conc. 305-445-7 Wastes, lead battery reprocessing 305-449-9 Waste solids, lead silver anode			

EC / List no Substance name	Hazard driving regulatory action[12]	Relevant use(s) & exposure potential	Suggested regulatory actions
308-011-5 Lead, bullion 308-506-6 Matte, precious metal 308-526-5 Waste solids, precious metal refining 308-765-5 Speiss, lead, nickel-contg. 310-061-8 Slimes and Sludges, battery scrap, antimony- and lead-rich 918-452-0 black copper, copper smelting 922-642-9 Cement, purification of copper electrolyte 931-663-2 Materials for reclaim, precious metal production by-products 931-674-2 Materials for reclaim,			

EC / List no Substance name	Hazard driving regulatory action[12]	Relevant use(s) & exposure potential	Suggested regulatory actions
Precious Metals in Bricks, Pots, Crucibles and trays, etc. 931-722-2 Reaction product of lead chloride or lead sulphate with alkaline solution 936-276-2 Concentrates of lead and zinc compounds with sulfur resulting from hydrometallurgy (hot acid leaching, super-hot acid leaching and flotation) 948-231-4 Fumes of germanium dioxide, calcium carbonate, iron oxides, sodium chloride and amorphous silica from smelting of Ge containing residues during germanium refining 948-652-3 Slimes and sludges, electrolytic refining of tin, lead and silver containing alloy			

EC / List no Substance name	Hazard driving regulatory action[12]	Relevant use(s) & exposure potential	Suggested regulatory actions
951-962-1 lead sulphate, recovery product from copper and zinc dusts			
283-659-9 Tin, melting residues 283-928-0 Tin ores, melting residues, hardhead 951-957-4 arsenic oxides, bismuth iron antimony oxides, sodium aluminium fluoride, zinc sulphate, recovery products from copper and zinc dusts	Known or potential hazard for carcinogenicity		
273-744-9 Scale (coating), copper 700-872-9 Elemental tellurium and bismuth concentrate resulting from leaching and cementation 930-776-4 Silicomanganese manufacturing fumes dedusting solid residues	Known or potential hazard for reproductive toxicity		

EC / List no Substance name	Hazard driving regulatory action[12]	Relevant use(s) & exposure potential	Suggested regulatory actions
931-506-8 Silver electrolyte 948-001-3 sludge, calcine			
265-996-3 Iron ores, agglomerates 265-997-9 Iron sinter 266-005-7 Dust, steelmaking 266-006-2 Slimes and Sludges, blast furnace and steelmaking 273-694-8 Zinc, dross 933-944-5 Gold electrolyte	Not assessed. For further information see Annex 1.	Industrial (professional) and formulation uses as intermediate, base metals and alloys, laboratory chemicals, processing aids, fertilisers and construction materials. Potential for exposure for workers and release to environment.	**Currently no need for EU RRM** <u>Justification</u>: Overall, no or unlikely hazard that would lead to concern for the reported uses.

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

Suggested regulatory risk management action for 'Wastewater, zinc sulfate electrolytic, acid' (EC 273-723-4) due to known carcinogenicity and reproductive toxicity and for 'Mill scale (ferrous metal)' (EC 266-007-8) if reproductive toxicity and carcinogenicity hazards are confirmed.

Based on currently available information, there is a potential hazard for carcinogenicity (EC 273-723-4) and reproductive toxicity (both substances).

EC 273-723-4 is self-classified as carcinogenic and toxic to reproduction (both category 1B) due to presence of cadmium sulphate in the substance. Cadmium sulphate has category 1B harmonised classification for carcinogenicity, mutagenicity and reproductive toxicity as well as category 1 for acute and chronic aquatic toxicity. It is also identified as a substance of very high concern (SVHC). However, harmonised classification and SVHC identification do not directly apply to EC 273-723-4. Entry 23 restricts use of cadmium in different organic polymers, paints, plating and brazing fillers but EC 273-723-4 is not used in such applications.

EC 266-007-8 does not have any (self-)classifications. However, EC 266-007-8 contains manganese compounds. ECHA has assessed the regulatory needs of simple manganese compounds[13]. There are multiple studies with evidence of reproductive toxicity, neurotoxicity and aquatic toxicity of manganese compounds. Many of the observed effects in animals are severe, e.g., offspring mortality, resorptions and impaired spermatogenesis. The assessment of manganese compounds suggests as a first step the confirmation of the hazards via CLH and thus any regulatory action proposed for EC 266-007-8 is pending for that confirmation. EC 266-007-8 also contains chromium but the oxidation state of chromium is not reported and therefore carcinogenicity and mutagenicity, which is identified for hexavalent chromium, is inconclusive. This should be clarified in the context of the potential restriction process.

Based on the reported uses, there is potential for exposure of the substances for professional workers when used in fertilisers. In addition, professional workers use EC 266-007-8 in water treatment chemicals, fuels, constructions materials, metals and alloys and laboratory chemicals. Article service life in concrete and other constructions materials is also reported.

The professional uses in fertilisers, water treatment chemicals, fuels, construction materials and metals and alloys are expected to be widespread (at many sites and by many users). Professional use is often widespread with relatively low levels of operational controls and risk management measures but with often frequent exposures with a long duration. In addition, professional users may be self-employed and therefore not covered by occupational safety and health (OSH) legislation.

Therefore, a **restriction of the substance as such or as a concentration limit of the carcinogenic and reproductive toxic compounds in the substance used by professionals** is suggested.

[13] https://echa.europa.eu/documents/10162/99534c29-54e2-8fb3-f974-e6e84cbe6359

Restriction of professional uses is preferred over authorisation as it is considered to be more efficient and effective to introduce controls at the level of placing on the market rather than at the level of uses.

In addition, the use of the most harmful substances by professional workers has been recognised as an area of concern under the European Commission's Chemicals Strategy for Sustainability[14] which aims to extend to professional users under REACH the level of protection granted to consumers.

The fertiliser regulation (EU 2019/1009[15]) provides a harmonised approach for assessing hazardous substances in fertilisers under the CE marking within the context of the EU single market. Similarly, common assessment methods for the release of dangerous substances from construction products are developed under the construction product regulation (CPR, EU 2011/305) for CE marking[16].

The fertilisers regulation includes limit values for cadmium and manganese in specific fertilisers, however, as compliance with harmonised rules remain optional it does not alone seem to be sufficient to address the carcinogenicity and reproductive toxicity concern of EC 273-723-4 and EC 266-007-8 in fertilisers used by professional workers. Similarly, the CPR is not expected to include limit values for the exposure of professional workers to CMR substances in construction products. Moreover, the current assessment method considers release parameters (emission) rather than content. Therefore, the proposed restriction is considered justified to minimise exposure of professional workers for the substances from fertilisers and construction products.

Moreover, potential exposure from articles needs further investigation. The need for restricting substances in articles used by professionals or consumers should be considered in the context of the restriction of professional uses.

Currently no need to suggest (further) regulatory risk management actions for other substances in the group

Based on currently available information in self-classifications, for other substances in the group there is in many cases a potential hazard for carcinogenicity and reproductive toxicity and in many cases a potential hazard for mutagenicity as well as for acute and chronic aquatic toxicity due to the presence of lead, arsenic, cadmium and/or nickel containing compounds in the substances.

Substance List 951-951-1 does not have any (self-)classifications but it contains arsenic and cadmium compounds and can be therefore expected to be potentially carcinogenic, mutagenic and toxic to reproduction (CMR) and have aquatic toxicity. Similarly, List 930-776-4 is not (self-)classified but contains manganese compounds and can be therefore expected to be potentially toxic to reproduction and have aquatic toxicity.

Six substances (EC 265-996-3, 265-997-9, 266-005-7, 266-006-2, 273-694-8, and List 933-944-5) are not expected to have CMR hazard based on lack of (self-)

[14] European Commission, *Chemical Strategy for Sustainability Towards a Toxic-Free Environment*, available at https://ec.europa.eu/environment/pdf/chemicals/2020/10/Strategy.pdf

[15] https://eur-lex.europa.eu/eli/reg/2019/1009/oj

[16] https://single-market-economy.ec.europa.eu/tools-databases/cp-ds-legislation-substances-construction-products_en

classifications and absence of compounds containing metals identified to have CMR properties. List 933-944-5 is the only one of these six substances having self-classification for acute and chronic aquatic toxicity.

Based on information reported in the REACH registration dossiers, the substances have industrial and formulation uses as intermediates, base metals and alloys and laboratory chemicals. One substance (EC 266-006-2) has additionally industrial and formulation use in fertilisers, two (EC 266-005-7, 266-006-2) in constructions materials and five as processing aids (273-694-8, 273-707-7, 273-760-6, 273-802-3, 293-314-4). One substance (List 930-776-4) is used in pigment industry.

Professional uses are not reported as such for EC 266-005-7 and 266-006-2, however, exposure of professional workers for the substances during the use in fertilisers and construction materials cannot be fully excluded. However, these two substances are not expected to have C/M/R hazards and therefore no EU regulatory risk management action is currently proposed for these substances.

No professional or consumer uses or article service life is reported for List 930-776-4. Based on the reported composition, the use of pigments could be in e.g., colouring glass or glazing (e.g., ceramic tiles). The release from such matrix is in general expected to be low although there could be potential for release when such articles are cut, and also when demolished. In conclusion, the exposure is considered to be limited.

The exposure potential of the substances used in industrial settings (including formulations) is expected to be low. Furthermore, the self-classification as C/M/R requires company level risk management (RMM) to be in place and this should be sufficient to ensure safe use for the workers at industrial settings. Some specific uses of lead, arsenic and cadmium compounds are already restricted under REACH Annex XVII entries 19, 23 and 63.

The metals are expected to be persistent in the environment and exposure via environment cannot be excluded. However, assessment of regulatory needs based on exposure potential via environment would require risk assessment which is not possible due to the screening nature of the current assessment.

Therefore, no EU regulatory risk management action is currently proposed for any of the substances with only industrial or formulation uses. It is worth noting however that the strategy may need to be revisited and need for further regulatory action reconsidered if there is a change in the registration status or reported uses for any of these substances.

Annex 1: Overview of classifications

Data extracted on 13 October 2023

Only EC 273-749-6 (CAS 69012-50-6) has a harmonised classification:

Index number: 028-013-00-7
Carc. 1A H350i
STOT RE 1 H372
Aquatic Acute 1 H400
Aquatic Chronic 1 H410
Skin Sens. 1 H317

All the other substances have only classifications in registrations.

EC/ List No	CAS No	Substance name	Classification in registrations
265-996-3	65996-65-8	Iron ores, agglomerates	-
265-997-9	65996-66-9	Iron sinter	-
266-005-7	65996-72-7	Dust, steelmaking	Skin Sens. 1 H317
266-006-2	65996-73-8	Slimes and Sludges, blast furnace and steelmaking	-
266-007-8	65996-74-9	Mill scale (ferrous metal)	-
266-966-2	67711-90-4	Flue dust, copper-refining	Carc. 1A H350 Muta. 2 H341 Repr. 1A H360Df STOT Rep. Exp. 1 H372 Acute Tox. 3 H301 Acute Tox. 2 H330 Skin Corr. 1B H314 Eye Damage 1 H318 Skin Sens. 1 H317 Effect on or via lactation H362 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
266-967-8	67711-91-5	Matte, copper	Carc. 1A H350 Repr. 1A H360 STOT Rep. Exp. 1 H372 Effect on or via lactation H362 Aquatic Chronic 3 H412
266-972-5	67711-95-9	Slimes and Sludges, copper electrolytic	Carc. 1A H350 Muta. 2 H341 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 4 Acute Tox. 3 H301 Skin Irrit. 2 H315 Resp. Sens. 1 H334 Acute Tox. 2 H300 Skin Sens. 1 H317 Skin Corr. 1B H314 Eye Damage 1

EC/ List No	CAS No	Substance name	Classification in registrations
			Aquatic Acute 1 H400 Aquatic Chronic 1 H410
273-694-8	69011-50-3	Zinc, dross	-
273-695-3	69011-52-5	Tin, dross	Carc. 1A H350 Repr. 1A H360Df STOT Rep. Exp. 2 H373 Acute Tox. 3 H301 Skin Corr. 1B H314 Aquatic Acute 1 H400
273-701-4	69011-60-5	Lead alloy, base, Pb,Sn, dross	Carc. 1A H350 Muta. 2 H341 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 4 H302 Acute Tox. 3 H331 Skin Irrit. 2 H315 Eye Damage 1 H318 Skin Sens. 1 H317 Effect on or via lactation H362 Aquatic Acute 1 H400 Aquatic Chronic 2 H411
273-707-7	69011-69-4	Cadmium, dross	Carc. 1B H350 Muta. 2 H341 Repr. 2 H361 STOT Rep. Exp. 1 H372 Acute Tox. 2 H330 Acute Tox. 4 Skin Corr. 1A H314 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
273-721-3	69012-21-1	Wastewater, cadmium sulfate electrolytic, acid	Carc. 1A H350 Muta. 1B H340 Repr. 1B H360 STOT Rep. Exp. 1 H372 Acute Tox. 2 H330 Acute Tox. 3 H301 Eye Damage 1 Resp. Sens. 1 H334 Skin Sens. 1 H317 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
273-723-4	69012-24-4	Wastewater, zinc sulfate electrolytic, acid	Carc. 1B H350 Repr. 1B H360 STOT Rep. Exp. 2 H373 Acute Tox. 4 H302 Skin Corr. 1A H314 Eye Damage 1 H318 Aquatic Acute 1 H400 Aquatic Chronic 1 H410 Aquatic Chronic 2 H411
273-742-8	69012-43-7	Slimes and Sludges, zinc sulfate electrolytic	Carc. 2 H351 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 4 H332 Acute Tox. 4

EC/ List No	CAS No	Substance name	Classification in registrations
			Aquatic Acute 1 H400 Aquatic Chronic 1 H410
273-744-9	69012-45-9	Scale (coating), copper	Repr. 1A H360 Eye Irrit. 2 H319 STOT Rep. Exp. 2 H373 Acute Tox. 4 H302 Skin Sens. 1 H317 Acute Tox. 4 H332 Aquatic Chronic 2 H411
273-749-6	69012-50-6	Matte, nickel	Carc. 1A H350 Repr. 2 H361 STOT Rep. Exp. 1 H372 Resp. Sens. 1 H334 Skin Sens. 1 H317 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
273-752-2	69012-54-0	Electrolytes, copper-manufg., spent	Carc. 1A H350 Muta. 2 H341 Repr. 1B H360 STOT Rep. Exp. 1 H372 Acute Tox. 4 H302 Skin Corr. 1A H314 Resp. Sens. 1 Eye Damage 1 H318 Skin Sens. 1 H317 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
273-760-6	69012-63-1	Flue dust, zinc-refining	Carc. 1A H350 Carc. 2 H351 Muta. 2 H341 Repr. 1A H360 Eye Damage 1 H318 Skin Irrit. 2 H315 STOT Rep. Exp. 2 H373 Aquatic Chronic 3 H412
273-791-5	69029-45-4	Lead, dross, antimony-rich	Carc. 1A H350 Carc. 2 H351 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 3 H301 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Eye Damage 1 H318 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
273-792-0	69029-46-5	Lead, dross, bismuth-rich	Carc. 1A H350 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Corr. 1A H314 Eye Damage 1 H318 Effect on or via lactation H362

EC / List No	CAS No	Substance name	Classification in registrations
			Aquatic Acute 1 H400 Aquatic Chronic 1 H410
273-793-6	69029-47-6	Dore	Carc. 1A H350 Repr. 1A H360 STOT Rep. Exp. 2 H373 Skin Sens. 1B H317 Aquatic Chronic 3 H412
273-795-7	69029-51-2	Lead, antimonial, dross	Carc. 1A H350 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 3 H301 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
273-796-2	69029-52-3	Lead, dross	Carc. 1A H350 Muta. 2 H341 Repr. 1A H360FD STOT Rep. Exp. 1 H372 Acute Tox. 2 H300 Acute Tox. 3 H331 Skin Corr. 1B H314 Eye Damage 1 H318 Skin Sens. 1B H317 Effect on or via lactation H362 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
273-802-3	69029-60-3	Zinc, desilverizing skims	Carc. 1B H350 Repr. 1A H360 STOT Rep. Exp. 1 H372 Aquatic Chronic 1 H410 Aquatic Chronic 2 H411
273-809-1	69029-67-0	Flue dust, lead-refining	Carc. 1A H350 Muta. 1B H340 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 3 H301 Acute Tox. 2 H330 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318 Skin Sens. 1 H317 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
273-836-9	69029-97-6	Speiss, copper	Carc. 1A H350 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 4 H302 Acute Tox. 4 H332 Effect on or via lactation H362 Skin Sens. 1 H317 Aquatic Acute 1 H400 Aquatic Chronic 1 H410

EC/ List No	CAS No	Substance name	Classification in registrations
273-925-2	69227-11-8	Lead, dross, copper-rich	Carc. 1A H350 Muta. 2 H341 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 4 H302 Acute Tox. 4 H332 Resp. Sens. 1 H334 Skin Sens. 1 H317 Effect on or via lactation H362 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
282-356-9	84195-51-7	Matte, lead	Carc. 1A H350 Repr. 1A H360 STOT Rep. Exp. 1 H372 STOT Rep. Exp. 2 H373 Acute Tox. 3 H301 Acute Tox. 4 H302 Skin Irrit. 2 H315 Eye Damage 1 H318 Eye Irrit. 2 H319 Skin Sens. 1 H317 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
282-366-3	84195-61-9	Speiss, lead	Carc. 1A H350 Muta. 2 H341 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 3 H301 Acute Tox. 4 H302 Acute Tox. 4 H332 Acute Tox. 3 H331 Skin Irrit. 2 H315 Eye Damage 1 H318 Resp. Sens. 1 H334 Skin Sens. 1 H317 Effect on or via lactation H362 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
283-659-9	84696-55-9	Tin, melting residues	Carc. 1B H350 Aquatic Chronic 2 H411
283-928-0	84776-04-5	Tin ores, melting residues, hardhead	Carc. 1A H350 Aquatic Chronic 3 H412
293-314-4	91053-49-5	Leach residues, zinc ore, lead-contg.	Carc. 1A H350 Muta. 1B H340 Repr. 1A H360 STOT Rep. Exp. 1 H372 STOT Rep. Exp. 2 H373 Acute Tox. 2 H330 Acute Tox. 3 H301 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318 Aquatic Acute 1 H400 Aquatic Chronic 1 H410 Eye Irrit. 2 Aquatic Chronic 2 H411

EC/ List No	CAS No	Substance name	Classification in registrations
305-411-1	94551-62-9	Calcines, lead-zinc ore conc.	Carc. 1B H350 Repr. 1A H360 STOT Rep. Exp. 2 H373 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
305-445-7	94551-99-2	Wastes, lead battery reprocessing	Carc. 1A H350 Carc. 2 H351 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 3 H301 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Skin Sens. 1 H317 Eye Irrit. 2 H319 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
305-449-9	94552-05-3	Waste solids, lead silver anode	Carc. 2 H351 Repr. 1A H360 STOT Rep. Exp. 1 H373 Acute Tox. 4 H302 Acute Tox. 4 H332 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
308-011-5	97808-88-3	Lead, bullion	Carc. 1A H350 Carc. 2 H351 Repr. 1A H360FD STOT Rep. Exp. 1 H372 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Sens. 1 H317 Effect on or via lactation H362 Aquatic Chronic 3 H412 Aquatic Chronic 2 H411
308-496-3	98072-44-7	Flue dust, precious metal refining	Carc. 1A H350 Muta. 1B H340 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 3 H301 Acute Tox. 3 H331 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Sens. 1 H317 Eye Damage 1 H318 Resp. Sens. 1 Skin Corr. 1B H314 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
308-506-6	98072-52-7	Matte, precious metal	Carc. 2 H351 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 4 H302 Acute Tox. 4 H332

EC/ List No	CAS No	Substance name	Classification in registrations
			Resp. Sens. 1B H334 Skin Sens. 1 H317 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
308-516-0	98072-61-8	Slimes and Sludges, precious metal refining	Carc. 1A H350 Muta. 1B H340 Muta. 2 H341 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 3 H301 Acute Tox. 4 H332 Acute Tox. 4 H302 Skin Corr. 1A H314 Skin Sens. 1 H317 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Eye Damage 1 Resp. Sens. 1 H334 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
308-526-5	98072-70-9	Waste solids, precious metal refining	Carc. 1A H350 Repr. 1A H360 Acute Tox. 4 H302 Acute Tox. 4 H332 Eye Damage 1 H318 Skin Sens. 1 H317 STOT Rep. Exp. 1 H372 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
308-765-5	98246-91-4	Speiss, lead, nickel-contg.	Carc. 1A H350 Repr. 1A H360 Skin Irrit. 2 H316 Resp. Sens. 1 H334 Skin Sens. 1 H317 STOT Rep. Exp. 1 H372 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
310-050-8	102110-49-6	Residues, copper-iron-lead-nickel matte, sulfuric acid-insol.	Carc. 1A H350 Muta. 2 H341 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 3 H301 Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318 Resp. Sens. 1B H334 Skin Sens. 1A H317 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
310-051-3	102110-50-9	Residues, precious metal refining cementation	Carc. 1A H350 Muta. 2 H341 Repr. 1A H360FD Repr. 1B H360Df STOT Rep. Exp. 1 H372 STOT Rep. Exp. 2 H373 Acute Tox. 2 H300 Acute Tox. 2 H330

EC/ List No	CAS No	Substance name	Classification in registrations
			Acute Tox. 3 H301 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Skin Corr. 1B H314 Skin Sens. 1A H317 Skin Sens. 1B H317 Eye Damage 1 H318 Resp. Sens. 1B H334 Aquatic Acute 1 H400 Aquatic Chronic 1 H410 Aquatic Chronic 2 H411
310-061-8	102110-60-1	Slimes and Sludges, battery scrap, antimony- and lead-rich	Carc. 1B H350 Carc. 2 H351 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 4 H332 Acute Tox. 4 H302 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
700-872-9	-	Elemental tellurium and bismuth concentrate resulting from leaching and cementation	Repr. 1A H360FD STOT Rep. Exp. 2 H373 Acute Tox. 4 H302 STOT Single Exp. 3 H335 Skin Irrit. 2 H315 Eye Damage 1 H318 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
918-452-0	-	black copper, copper smelting	Carc. 1B H350 Repr. 1A H360 STOT Rep. Exp. 1 H372 Skin Sens. 1 H317 Resp. Sens. 1 H334 Effect on or via lactation H362 Aquatic Acute 1 H400 Aquatic Chronic 2 H411
922-642-9	-	Cement, purification of copper electrolyte	Carc. 1A H350 Repr. 1A H360 STOT Rep. Exp. 2 H372 STOT Single Exp. 2 H371 Acute Tox. 3 H331 Acute Tox. 3 H301 Skin Sens. 1 H317 Resp. Sens. 1 H334 Aquatic Acute 2 H401 Aquatic Chronic 2 H411
922-670-1	-	Sulfuric Acid, waste gas washing, copper smelting	Carc. 1A H350 Muta. 1B H340 STOT Rep. Exp. 2 H373 Skin Sens. 1 H317 Skin Corr. 1A H314 Eye Damage 1 H318 Met. Corr. 1 H290 Aquatic Chronic 1 H410
927-629-1	-	residue, nickel matte leaching	Carc. 1A H350 Muta. 2 H341

EC/ List No	CAS No	Substance name	Classification in registrations
			STOT Rep. Exp. 2 H373 Acute Tox. 4 H302 Skin Irrit. 2 H315 Skin Sens. 1 H317 Eye Irrit. 2 H319 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
930-776-4	-	Silicomanganese manufacturing fumes dedusting solid residues	-
931-506-8	-	Silver electrolyte	Repr. 1A H360 STOT Rep. Exp. 2 H373 Acute Tox. 4 H302 Skin Corr. 1B H314 Eye Damage 1 H318 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
931-663-2	-	Materials for reclaim, precious metal production by-products	Carc. 2 H351 Repr. 1A H360 STOT Rep. Exp. 1 H372 STOT Rep. Exp. 2 H373 Acute Tox. 4 H302 Acute Tox. 4 H332 Resp. Sens. 1 H334 Skin Sens. 1 H317 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
931-674-2	-	Materials for reclaim, Precious Metals in Bricks, Pots, Crucibles and trays, etc.	Carc. 1A H350 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 3 H301 Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Irrit. 2 H315 Skin Sens. 1 H317 Eye Damage 1 H318 Aquatic Acute 1 H400 Aquatic Chronic 1 H410 Aquatic Chronic 3 H412
931-722-2	-	Reaction product of lead chloride or lead sulphate with alkaline solution	Carc. 2 H351 Repr. 1A H360 STOT Rep. Exp. 2 H373 Acute Tox. 4 H302 Acute Tox. 4 H332 Aquatic Chronic 1 H410
933-944-5	-	Gold electrolyte	Acute Tox. 4 H302 Acute Tox. 4 H332 Skin Sens. 1 H317 Skin Corr. 1A H314 Eye Damage 1 H318 Resp. Sens. 1 H334 Aquatic Chronic 1 H410 Aquatic Acute 1 H400
936-276-2	-	Concentrates of lead and zinc compounds with sulfur resulting	Carc. 2 H351 Repr. 1A H360 Acute Tox. 4 H302

EC/ List No	CAS No	Substance name	Classification in registrations
		from hydrometallurgy (hot acid leaching, super-hot acid leaching and flotation)	Acute Tox. 4 H332 Skin Irrit. 2 H315 Eye Damage 1 H318 STOT Rep. Exp. 1 H372 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
943-528-5	-	Precipitate from tellurium containing acid solutions by copper metal cementation	Carc. 1A H350 Muta. 2 H341 Repr. 1A H360 STOT Rep. Exp. 1 H372 Acute Tox. 3 H301 Acute Tox. 4 H332 Skin Irrit. 2 H315 Skin Sens. 1 H317 Eye Damage 1 H318 Resp. Sens. 1 H334 Aquatic Acute 1 H400 Aquatic Chronic 2 H411
948-001-3	-	sludge, calcine	Repr. 1A H360
948-231-4	-	Fumes of germanium dioxide, calcium carbonate, iron oxides, sodium chloride and amorphous silica from smelting of Ge containing residues during germanium refining	Carc. 1A H350 Repr. 2 H361 STOT Rep. Exp. 2 H373 Acute Tox. 4 H302 Aquatic Acute 1 H400 Aquatic Chronic 3 H412
948-652-3	-	Slimes and sludges, electrolytic refining of tin, lead and silver containing alloy	Carc. 1A H350 Repr. 1A H360 STOT Rep. Exp. 1 H372 Skin Sens. 1 H317 Eye Damage 1 H318 Effect on or via lactation H362 Flam. Solid 1 H228 Self Heat. 1 H251 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
951-951-1	-	sodium copper sulphate, sodium zinc chloride, zinc sulphate, recovery products from copper and zinc dusts	Acute Tox. 4 H302 Skin Corr. 1B H314 Eye Damage 1 H318 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
951-957-4	-	arsenic oxides, bismuth iron antimony oxides, sodium aluminium fluoride, zinc sulphate, recovery products from copper and zinc dusts	Carc. 1A H350 STOT Rep. Exp. 1 H372 Acute Tox. 2 H300 Acute Tox. 4 H332 Skin Corr. 1B H314 Eye Damage 1 H318 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
951-962-1	-	lead sulphate, recovery product from copper and zinc dusts	Carc. 2 H351 Repr. 1A H360Df STOT Rep. Exp. 1 H372 Acute Tox. 4 H302 Acute Tox. 4 H332

EC / List No	CAS No	Substance name	Classification in registrations
			Effect on or via lactation H362 Aquatic Acute 1 H400 Aquatic Chronic 1 H410

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

Data extracted on 13 October 2023

Main types of applications structured by product or article types	EC / List	266-007-8	273-723-4
PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents			I
PC 37: Water treatment chemicals		I, **P**	
PC 11: Explosives		F, I	
PC 12: Fertilisers		I, **P**	F, **P**
PC 27: Plant protection products		F, I	
PC 31: Polishes and wax blends		F, I	
PC 24: Lubricants, greases, release products		F, I	
PC 13: Fuels		F, I, **P**	
PC 9b: Fillers, putties, plasters, modelling clay		F, I, **P**, **A**	
PC 9a: Coatings and paints, thinners, paint removes		F, I, **A**	
PC 38: Welding and soldering products, flux products		I, **A**	
PC 7: Base metals and alloys		F, I, **P**, **A**	
PC 21: Laboratory chemicals		I, **P**	
PC 19: Intermediate		F, I, **P**	I

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

Main types of applications structured by product or article types	EC/ List	265-996-3	265-997-9	266-005-7	266-006-2	266-966-2	266-967-8	266-972-5	273-694-8
PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents									F
PC 12: Fertilisers					F, I				
PC 9b: Fillers, putties, plasters, modelling clay				I, (A)	F, I, (A)				
PC 7: Base metals and alloys		I	I	F, I	F, I				F, I
PC 21: Laboratory chemicals									F
PC 19: Intermediate		I	I	F		I	I	I	

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, (A) expert judgement on article service life

Main types of applications structured by product or article types	EC/ List	273-695-3	273-701-4	273-707-7	273-721-3	273-742-8	273-744-9	273-749-6	273-752-2
PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents				I					
PC 7: Base metals and alloys			I	I					
PC 21: Laboratory chemicals				I					
PC 19: Intermediate				I		I	I	I	I

I: industrial use

Main types of applications structured by product or article types	EC/ List	273-760-6	273-791-5	273-792-0	273-793-6	273-795-7	273-796-2	273-802-3	273-809-1
PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents		I						I	
PC 7: Base metals and alloys		I			I			I	
PC 21: Laboratory chemicals		I						I	
PC 19: Intermediate		I	I	I	I	I	I	I	I

I: industrial use

Main types of applications structured by product or article types	EC/ List	273-836-9	273-925-2	282-356-9	282-366-3	283-659-9	283-928-0	293-314-4	305-411-1
PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents								I	
PC 7: Base metals and alloys								F, I	
PC 21: Laboratory chemicals								I	
PC 19: Intermediate		I	I	I	I	I	I	F, I	I

F: formulation, I: industrial use

Main types of applications structured by product or article types	EC/ List	305-445-7	305-449-9	308-011-5	308-496-3	308-506-6	308-516-0	308-526-5	308-765-5
PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents									
PC 7: Base metals and alloys		I		I					
PC 21: Laboratory chemicals									
PC 19: Intermediate		I	I	I	I	I	I	I	I

I: industrial use

Main types of applications structured by product or article types	EC/ List	310-050-8	310-051-3	310-061-8	700-872-9	918-452-0	922-642-9	922-670-1	927-629-1
PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents									
PC 7: Base metals and alloys									
PC 21: Laboratory chemicals									
PC 19: Intermediate		I	I	I	I	I	I	I	I

I: industrial use

Main types of applications structured by product or article types	EC/ List	930-776-4	931-506-8	931-663-2	931-674-2	931-722-2	933-944-5	936-276-2	943-528-5
PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents									
PC 7: Base metals and alloys						I			
PC 21: Laboratory chemicals									
PC 19: Intermediate			I	I	I	I	I	I	I
Pigment industry		I							

I: industrial use

Main types of applications structured by product or article types	EC/ List	948-231-4	948-652-3	951-951-1	951-957-4	951-962-1
PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents						
PC 7: Base metals and alloys			I			I
PC 21: Laboratory chemicals						
PC 19: Intermediate		I		I	I	I

I: industrial use

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

Data extracted on 23 October 2023

EC/List No	RMOA, ARN	Restriction* Annex XVII	CLH Annex VI (CLP)	Actions not under REACH/ CLP
273-701-4	YES	Entry 63		OEL
273-707-7		Entry 23		
273-721-3				
273-749-6		Entry 27	YES	OEL Prohibited in cosmetics
273-760-6		Entry 63		
273-791-5				OEL
273-792-0				OEL
273-793-6				
273-795-7				OEL
273-796-2				
273-802-3				
273-809-1		Entry 19 and 63		
273-925-2		Entry 63		OEL
282-356-9				
282-366-3				
293-314-4				
305-411-1				
305-445-7				

EC / List No	RMOA, ARN	Restriction* Annex XVII	CLH Annex VI (CLP)	Actions not under REACH / CLP
305-449-9				
308-011-5				OEL
308-506-6				
308-516-0				
308-765-5				
310-050-8				OEL
310-051-3				
310-061-8				
933-944-5				Allowed as colorant in cosmetics, conditions of use may apply

*Some of the broad restriction entries in the Annex XVII of REACH are not represented in the overview, e.g. when the scope of the restriction is defined by its classification or the substance identification is broad (e.g. entries 3, 28-30, 40 and 75).

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