# Assessment of regulatory needs

**Authority: European Chemicals Agency (ECHA)**

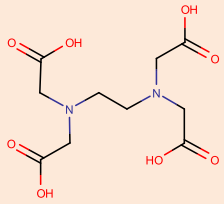
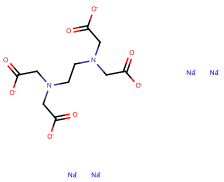
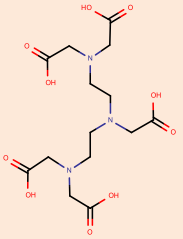
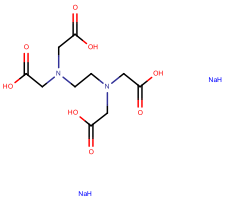
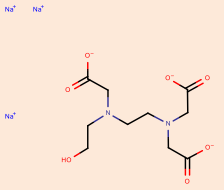
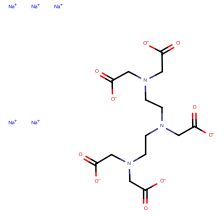
**Group Name: EDTA-related acid and salts**

**General structure: See page 12**

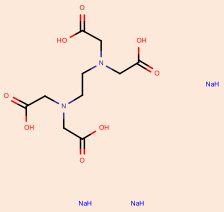
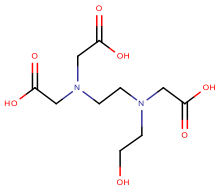
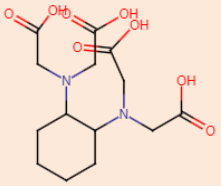
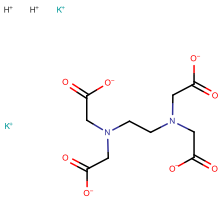
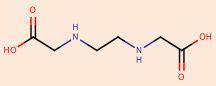
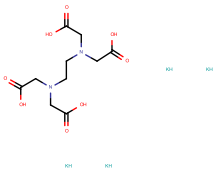
**Revision history**

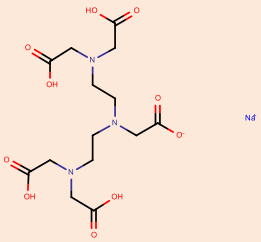
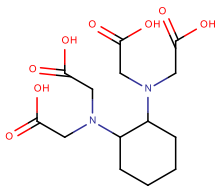
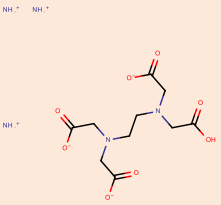
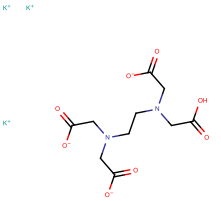
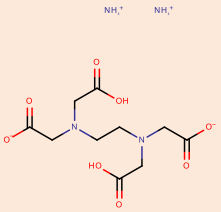
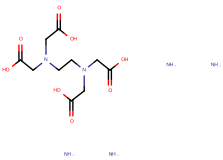
| *Version* | *Date* | *Description* |
|---|---|---|
| **1.0** | 27 March 2023 | |
| | | |

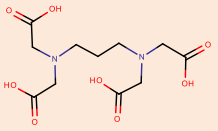
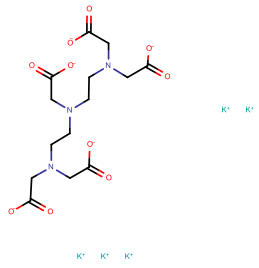
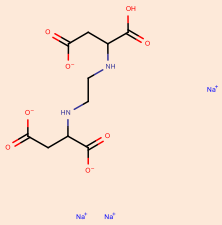
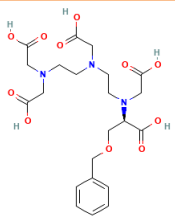
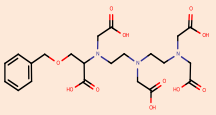
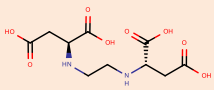
**Substances within this group:**

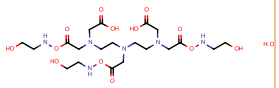
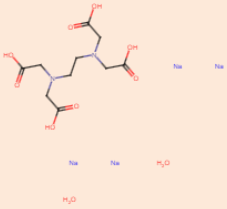
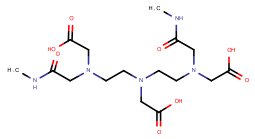
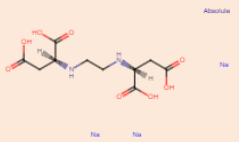
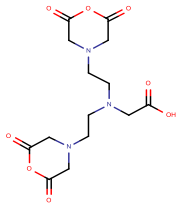
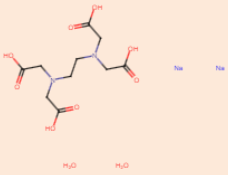
| EC/List number | CAS number | Substance name and acronym | Chemical structures | Registration type (full, OSII or TII, NONS), highest tonnage band among all the registrations (t/y) [1] |
|---|---|---|---|---|
| **200-449-4** | 60-00-4 | edetic acid<br>**EDTA** |  | Full, >1000 |
| **200-573-9** | 64-02-8 | tetrasodium ethylenediaminetetraacetate<br>**EDTA-Na4** |  | Full, >1000 |
| **200-652-8** | 67-43-6 | N-carboxymethyliminobis(ethylenenitrilo)tetra(acetic acid)<br>**DTPA** |  | Full, >1000 |
| **205-358-3** | 139-33-3 | disodium dihydrogen ethylenediaminetetraacetate<br>**EDTA-Na2** |  | Full, >1000 |
| **205-381-9** | 139-89-9 | trisodium 2-(carboxylatomethyl(2-hydroxyethyl)amino)ethyliminodi(acetate)<br>**HEDTA-Na3** |  | Full, 100-1000 |
| **205-391-3** | 140-01-2 | pentasodium (carboxylatomethyl)iminobis(ethylenenitrilo)tetraacetate<br>**DTPA-Na5** |  | Full, >1000 |

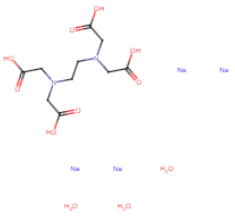
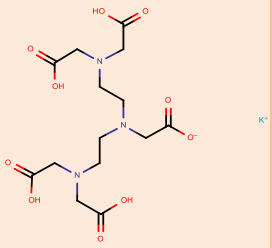
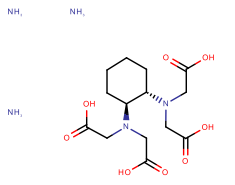
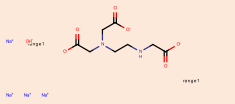
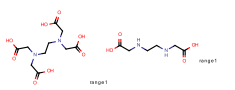
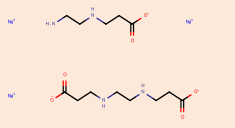
[1] Note that the total aggregated tonnage band may be available on ECHA's webpage at https://echa.europa.eu/information-on-chemicals/registered-substances

| EC/List number | CAS number | Substance name and acronym | Chemical structures | Registration type (full, OSII or TII, NONS), highest tonnage band among all the registrations (t/y) [1] |
|---|---|---|---|---|
| **205-758-8** | 150-38-9 | trisodium hydrogen ethylenediaminetetraacetate **EDTA-Na3** |  | Full, 10-100 |
| **205-759-3** | 150-39-0 | N-(2-hydroxyethyl)ethylenediaminetriacetic acid **HEDTA** |  | Full, not (publicly) available |
| **207-582-7** | 482-54-2 | cyclohex-1,2-ylenediaminetetra(acetic acid) **CDTA** |  | C&L notification |
| **217-895-0** | 2001-94-7 | dipotassium dihydrogen ethylenediaminetetraacetate **EDTA-K2** |  | Full, 1-10 |
| **227-105-6** | 5657-17-0 | ethylenediamine-N,N'-di(acetic acid) **EDDA** |  | Full, not (publicly) available |
| **227-743-5** | 5964-35-2 | tetrapotassium ethylenediaminetetraacetate **EDTA-K4** |  | Full, not (publicly) available |

| EC/List number | CAS number | Substance name and acronym | Chemical structures | Registration type (full, OSII or TII, NONS), highest tonnage band among all the registrations (t/y) [1] |
|---|---|---|---|---|
| **235-979-5** | 13078-36-9 | trisodium dihydrogen -N,N-[bis[2-[bis(carboxylatomethyl) amino]ethyl]]glycinate **DTPA-Na3** |  | Full, not (publicly) available |
| **236-308-9** | 13291-61-7 | trans-cyclohexane-1,2-dinitrilotetraacetic acid **trans-CDTA** |  | Full, not (publicly) available |
| **240-073-8** | 15934-01-7 | triammonium hydrogen ethylenediaminetetraacetate **EDTA-(NH4)3** |  | Full, not (publicly) available |
| **241-543-5** | 17572-97-3 | tripotassium hydrogen ethylenediaminetetraacetate **EDTA-K3** |  | Full, not (publicly) available |
| **244-063-4** | 20824-56-0 | diammonium dihydrogen ethylenediaminetetraacetate **EDTA-(NH4)2** |  | Full, 100-1000 |
| **245-022-3** | 22473-78-5 | tetraammonium ethylenediaminetetraacetate **EDTA-(NH4)4** |  | Full, not (publicly) available |

| EC/List number | CAS number | Substance name and acronym | Chemical structures | Registration type (full, OSII or TII, NONS), highest tonnage band among all the registrations (t/y) [1] |
|---|---|---|---|---|
| **400-400-9** | 1939-36-2 | N,N'-propylene-1,3-diylbis[N-(hydroxycarbonyl-methyl)glycine]<br>**PDTA** |  | NONS |
| **404-290-3** | 7216-95-7 | pentapotassium 2,2',2'',2''',2''''-(ethane-1,2-diylnitrilo) pentaacetate<br>**DTPA-K5** |  | Full, not (publicly) available |
| **416-530-4** | 178949-82-1 | L-Aspartic acid, N,N'-1,2-ethanediylbis-, sodium salt (1:3)<br>**EDDS-Na3** |  | Full, not (publicly) available |
| **426-360-2** | 113786-33-7 | 12-Oxa-3,6,9-triazatridecanoic acid, 10-carboxy-3,6,9-tris(carboxymethyl)-13-phenyl-<br>**BOPTA** |  | NONS |
| **439-840-1** | 20846-91-7 | L-Aspartic acid, N,N'-1,2-ethanediylbis-<br>**EDDS** |  <br>  | Full, not (publicly) available |
| **443-130-7** | | RC-0015 | Not (publicly) available | NONS |
| **443-310-5** | | D0787 | Not (publicly) available | NONS |

| EC/List number | CAS number | Substance name and acronym | Chemical structures | Registration type (full, OSII or TII, NONS), highest tonnage band among all the registrations (t/y) [1] |
|---|---|---|---|---|
| **453-140-3** | | 3,6,9-tris(2-{[(2-hydroxyethyl)amino]oxy}-2-oxoethyl)-3,6,9-triazaundecan-1,11-dioic acid<br>**DTPA-BHEA** |  | Full, not (publicly) available |
| **600-485-4** | 10378-23-1 | Ethylenediaminetetraacetic acid tetrasodium salt dihydrate –<br>**EDTA-Na4.2H2O** |  | C&L notification |
| **601-640-9** | 119895-95-3 | 5,8-bis(carboxymethyl)]-11-[2-(methylamino)-2-oxoethyl]-3-oxo-2,5,8,11-tetreazatridecan-13-oic acid<br>**DTPA-BMA** |  | OSII or TII |
| **605-842-8** | 178949-82-1 | (S,S)-Ethylenediamine-N,N'-disuccinic acid trisodium salt<br>**EDDS-Na3** |  | C&L notification |
| **607-286-1** | 23911-26-4 | Diethylenetriaminepentaacetic acid dianhydride<br>**DTPABA** |  | OSII or TII |
| **613-386-6** | 6381-92-6 | 2-[2-[bis(carboxymethyl)amino]ethyl-(carboxymethyl)amino]acetic acid<br>**EDTA-Na2.2H2O** |  | C&L notification |

| EC/List number | CAS number | Substance name and acronym | Chemical structures | Registration type (full, OSII or TII, NONS), highest tonnage band among all the registrations (t/y) [1] |
|---|---|---|---|---|
| **614-059-0** | 67401-50-7 | Glycine, N,N'-1,2-ethanediylbis[[]N-(carboxymethyl)-, tetrasodium salt, trihydrate<br>**EDTA-Na4.3H2O** |  | Not registered |
| **615-726-9** | 7216-95-7 | Glycine, N,N-bis[2-[bis(carboxymethyl)amino]ethyl]-, pentapotassium salt<br>**DTPA-K5** |  | C&L notification |
| **700-166-0** | | Triammonium salt of 2,2',2'',2'''-(cyclohexane-1,2-diyldinitrilo)tetraacetic acid<br>**trans–CDTA-(NH4)3** |  | OSII or TII |
| **939-615-2** | | Reaction mass of Glycine, N-(carboxymethyl)-N-(2-((carboxymethyl)amino) ethyl)-, trisodium salt and sodium hydroxide<br>**EDTrA-Na3-NaOH** |  | Not registered |
| **942-821-5** | | Reaction mass of edetic acid and ethylenediamine-N,N'-di(acetic acid)<br>**EDTA-EDDA** |  | OSII or TII |
| **947-397-5** | | reaction mass of disodium;3-[2-(2-carboxylatoethylamino)-ethylamino]propanoate and sodium 3-[(2-aminoethyl)amino]propanoate<br>**AEA-EDDA-Na3** |  | Full, not (publicly) available |

This table contains also group members that are only notified under the CLP Regulation. Should further regulatory risk management action on one or more substances in the group be considered, ECHA may make an additional search for related C&L notified substances to be included in the group and develop an assessment of regulatory needs for them.

# 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. Assessment 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 purpose of the assessment of regulatory needs of a group of substances is to help authorities conclude on the most appropriate way to address the identified concerns for a group of substances or a single substance, i.e. the combination of the regulatory risk management instruments to be used and any intermediate steps, such as data generation, needed to initiate and introduce these regulatory measures.

An assessment of regulatory needs can conclude that regulatory risk management at EU level is required for a (group of) substance(s) (e.g. harmonised classification and labelling, Candidate List inclusion, restriction, other EU legislation) or that no regulatory action is required at EU level. While the assessment is done for a group of substances, the (no) need for regulatory action can be identified for the whole group, a subgroup or for single substance(s).

The assessment of regulatory needs is an important step under ECHA's Integrated Regulatory Strategy. However, it is not part of the formal processes defined in the legislation but aims to support them.

The assessment of regulatory needs can be applied to any group of substances or single substance, i.e., any type of hazards or uses and regardless of the previous regulatory history or lack of such. It can be done based on a different level of information. A Member State or ECHA can carry out this case-by-case analysis. The starting point is available information in the REACH registrations and any other REACH and CLP information. However, a more extensive set of information can be available, e.g. assessment done under REACH/CLP or other EU legislation, or can be generated in some cases (e.g. further hazard information under dossier evaluation). Uncertainties associated to the level of information used should be reflected in the documentation. It will be revisited when necessary. For example, after further information is generated and the hazard has been clarified or when new insights on uses are available. It can be revisited by the same or another authority.

The responsibility for the content of this assessment rests with the authority that developed it. It is possible that other authorities do not have the same view and may develop further assessment of regulatory needs. The assessment of regulatory needs does not yet initiate any regulatory process, but any authority can consequently do so and should indicate this by appropriate means, such as the Registry of Intentions.

For more information on Assessment of regulatory needs please consult ECHA website[2].

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

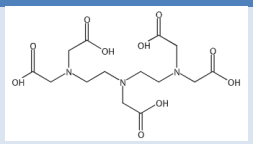
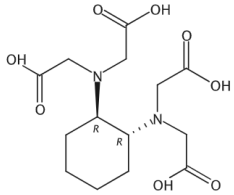
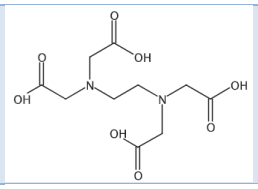
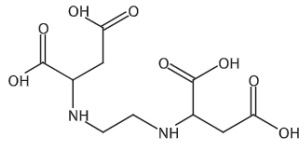
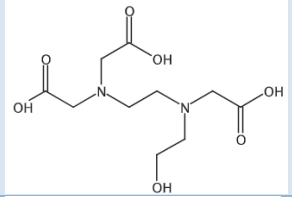
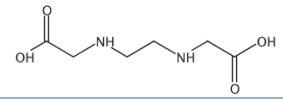
# Glossary

| | |
|---|---|
| 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 |
| 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 |

# 1 Overview of the group

The present group is composed of substances with structural relation to ethylenediaminetetraacetic acid (EDTA), a well-known chelating agent. Substances with full registrations and their chemical structure (presented in the form of their acids) that are covered by this group are presented in Table 1.

Table 1: Main substances with full registrations and their chemical structure (presented in the form of their acid) covered by this group

| Acronym | Chemical name of the acid used as basis for the acronym | Chemical structure | Chelation capacity for metals | Stability constant for Zn(II) [3,4] |
|---|---|---|---|---|
| **DTPA** | diethylenetriamine-pentaacetic acid |  | 8 | 18.40,<br>18.75 |
| **CDTA** | cyclohexane-1,2-diamine-tetraacetic acid |  | 6 | 18.67 |
| **EDTA** | ethylenediamine-tetraacetic acid |  | 6 | 16.50 |
| **EDDS** | ethylenediamine-N,N'-disuccinic acid |  | 6 | No data |
| **HEDTA** | (2-hydroxyethyl)ethylenediamine-triacetic acid |  | 5 | 14.50,<br>14.70 |
| **EDDA** | ethylenediamine-N,N'-di(acetic acid) |  | 4 | No data |

The work on this group is related to the one performed for the COLLA project dealing with EDTA derivatives. The COLLA project report is publicly available on the

[3] based on: Hart et al., 2012 *Ethylenediaminetetraacetic Acid and Related Chelating Agents,* Ullmann's Encyclopedia of Industrial Chemistry, 2012

[4] https://www.dojindo.eu.com/images/Product%20Photo/Chelate_Table_of_Stability_Constants.pdf

ECHA website[5]. In Appendix 1 of the COLLA project report the included substances are described. The COLLA assessment dealt with EDTA derivatives not limited to "empty" e.g. EDTA, DTPA, PDTA and HEDTA chelates (which are the focus of the current group assessment) but also with EDTA derivatives complexed with metal ions (such as $Cu^{2+}$, $Fe^{2+}$; $Mn^{2+}$, $Zn^{2+}$), which are in the scope of another group assessment ('(Hydroxy)carboxylic acid amine chelates').

The substances are complexing and sequestering (binding or confining) metal ions such as $Fe^{3+}$, $Cu^{2+}$, $Zn^{2+}$, $Fe^{2+}$, $Mn^{2+}$, $Ca^{2+}$ and $Mg^{2+}$. The metal complexing of EDTA is shown in Figure 1.

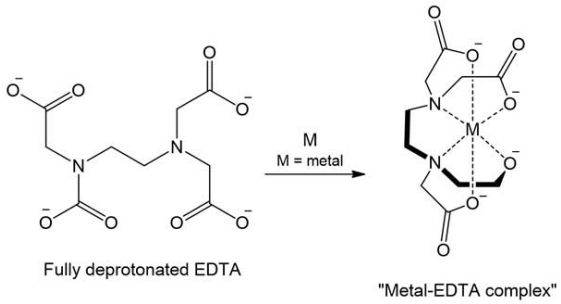



Figure 1: Hexa-coordination capacity of EDTA for metal chelation. Typically, a metal-EDTA complex with octahedral geometry is generated.

All substances in the current group are EDTA-like acids or salts with monovalent cations.

The substances in the current group are widely used metal ion "control"/chelating agents. The structures of these substances show multiple up to six and eight complexing sites enabling one molecule to interact with all the reactive canters of a metal ion (in red and blue in Figure 2). These ligands include both oxygen and nitrogen atoms, taking advantage of the fact that some metals bond more strongly to nitrogen and others prefer oxygen.

The chelation capacity of the substances in this group depends on one hand on the availability of electron donor atoms such as nitrogen from amines and oxygen in carboxyl groups. EDTA-, EDDS- and CDTA-like substances have a hexavalent complexation capacity, DTPA-like substances a higher, octavalent complexation capacity, while HEDTA- or EDDA-like substances have a lower complexation capacity compared to EDTA (Figure 2).

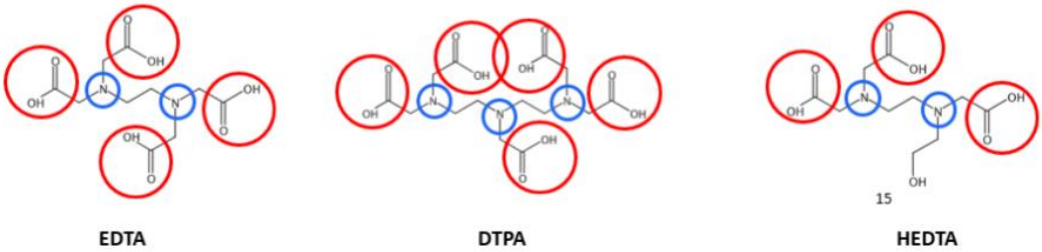



Figure 2: EDTA-like acids and salts have a structural symmetry and availability of electron donor atoms (nitrogen from amines and oxygen in COOH moieties)

[5] Collaborative approach pilot projects. March 2017 – March 2018. Final report: https://echa.europa.eu/documents/10162/13628/colla_pilot_project_report_en.pdf/0ba58a2e-675f-387e-4827-05aba076a0e0

The stability of this kind of organic complexes with metals is very difficult to predict because of the complexity of the organic compounds.

The chelation capacity is given as stability constant $K_{stab}$ of such complexes with metals (cf. Table 1). With regards to complexation of zinc ($Zn^{2+}$), the metal relevant for the reproductive effects due to zinc depletion, the stability constants were reported with 18.40 for DTPA, 16.50 for EDTA, and 14.70 for HEDTA[6]. In another source, the stability constant for HEDTA was indicated with 14.50, for CDTA with 18.67, for DTPA with 18.75, the two last ones being higher compared to EDTA reported with 16.50[7].

With few exceptions (EC 443-310-5, List 939-615-2, List 942-821-9) all the substances are mono-constituent substances.

Eleven substances in this group are included in a read-across category approach performed by the registrants of EDTA (EC 200-449-4), EDTA-Na4 (EC 200-573-9), EC, EDTA-Na2 (EC 205-358-3) and EDTA-(NH4)2 (EC 244-063-4). The read-across approach uses DTPA, EDTA, and HEDTA, e.g.:

1. DTPA-based chelates including DTPA (EC 200-652-8), DTPA-Na5 (EC 205-391-3), DTPA-K5 (EC 404-290-3)
2. EDTA-based chelates including EDTA (EC 200-449-4), EDTA-Na4 (EC 200-573-9), EDTA-Na2 (EC 205-358-3), EDTA-(NH4)3 (EC 240-073-8), EDTA-(NH4)2 (EC 244-063-4), EDTA-(NH4)4 (EC 245-022-3)
3. HEDTA-based chelates including HEDTA-Na3 (EC 205-381-9), HEDTA (EC 205-759-3)

Another read-across category provided in the registration for DTPA-Na5 (EC 205-391-3) also includes six substances of this group and in addition EDTA-Na3 (EC 205-758-8).

Many of the registered substances in this group are very frequently used industrially, by professionals and consumers, e.g., as chelating, stabilising, catalytic and/or antioxidant agents and/or to reduce water hardness in a very broad range of product categories including washing and cleaning products, pharmaceuticals and cosmetics. Several other registered substances of this group are used only industrially, e.g., as intermediates and laboratory chemicals.

EDTA (EC 200-449-4) is listed in Regulation (EU) No. 10/2011, hence this substance and all salts can be used for plastics with food contact. There is no specific migration limit. However, the maximum overall migration is set to 60 mg/kg food.

[6] based on: Hart et al., 2012 *Ethylenediaminetetraacetic Acid and Related Chelating Agents,* Ullmann's Encyclopedia of Industrial Chemistry, 2012

[7] https://www.dojindo.eu.com/images/Product%20Photo/Chelate_Table_of_Stability_Constants.pdf

**Note on the scope of ECHA's assessment of regulatory needs**

Regarding hazards, the focus of ECHA's assessment is 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 table in section 3. This does not mean that the substances do not have other known or potential hazards. In some specific cases, where ECHA identifies a need for regulatory risk management action at EU level for other hazards (e.g. neurotoxicity, STOT RE), such additional hazards may be addressed in the assessment. An overview of classification is presented in Annex 1.

On the exposure side, ECHA is mainly using the information on uses reported in the registration dossiers (IUCLID) as a proxy for assessing the potential for exposure to humans and releases to the environment. The potential for release / exposure is generally considered high for "widespread" uses, i.e. professional and consumer uses and uses in articles. For these uses, normally happening at many places, the expected level of control is *à priori* considered limited. The chemical safety reports are not necessarily consulted, and no quantitative exposure assessment is performed at this stage.

# 2 Justification for the need for regulatory risk management action at EU level

**Based on currently available information, there is a need for (further) EU regulatory risk management (CLH, OEL, restriction)** for reproductive (developmental) toxicity hazards, damage to the respiratory tract, and aquatic toxicity.

*Reproductive toxicity*

The mechanism of toxicity of all substances in the evaluated group is the chelating potential for complexing and sequestering (binding or confining) metal ions such as $Fe^{3+}$, $Cu^{2+}$, $Zn^{2+}$, $Fe^{2+}$, $Mn^{2+}$, $Ca^{2+}$ and $Mg^{2+}$.

The role of zinc in reproduction has been extensively studied. For example, in male rats, zinc deficiency can lead to gonadal dysfunction, decreased testicular weight, diminished seminiferous tubules, and defects in spermatozoa. In female rats, zinc deficiency can disrupt the oestrous cycle with prolonged gestation, stillbirths, and difficulty in parturition. Zinc has been shown to be essential to foetal skeletal development in rats, with increased foetal resorption rates, reduced or inhibited foetal growth, and high incidences of congenital malformations (NTP TR592)[8].

On 3 May 2022 harmonised classification as Repr. 1B; H360D (specific concentration limit ≥ 3 %), STOT RE 2; H373 (inhalation), Acute Tox. 4; H332 (inhalation: ATE = 1.5 mg/L (dust or mist)) was published in the Official Journal of the EU for DTPA (EC 200-652-8), DTPA-Na5 (EC 205-391-3), and DTPA-K5 (EC 404-290-3). In its opinion, RAC considered the read-across from other un-

[8] NTP TR592

complexed substances acceptable: EDTA (EC 200-449-4), EDTA-Na4 (EC 200-573-9), EDTA-Na2 (EC 205-358-3), EDTA-Na3 (EC 205-758-8), DTPA-Na5 (EC 205-391-3), DTPA-K5 (EC 404-290-3). All these substances are also group members. (Note that an application for annulment of the Annex VI entry for the three DTPAs is under processing in the General Court in Luxemburg).

All substances in the group are therefore considered to have a potential for developmental toxicity, albeit the potency might vary depending e.g., on the chelation potency (DTPA > EDTA > HEDTA), the route of administration (teratogenic effects at lower doses observed with dietary administration compared to gavage administration) and the highest dose administered (with substances of lower potency, effects might occur only at doses higher than 1 000 mg/kg bw/day).

Even there is a known role of zinc depletion for fertility, no reliable studies regarding fertility are available but effects on fertility may be expected for these substances.

*Damage to the respiratory tract following inhalation*

In addition to reproductive toxicity, there is also concern (STOT RE 2) for damage to the respiratory tract of workers repeatedly exposed via inhalation. Findings in an inhalation study with EDTA-Na2 (EC 205-358-3) was used as justification for a harmonised classification STOT RE 2 (H373, inhalation) for the three DTPA substances (EC 200-652-8, EC 205-391-3, EC 404-290-3). The effects observed were also consistent with a chelation effect of calcium and perhaps zinc ions in the cell junctions and membranes that would cause cellular detachment and death with subsequent inflammation, necrosis and infiltration of inflammatory cells.

*Repeated dose, mutagenic, carcinogenic, skin sensitising or ED properties*

Based on the data in the registration dossiers, the substances are unlikely to be mutagenic, carcinogenic, sensitising (except EC 947-397-5 which is sensitising), showing concern for the repeated dose toxicity via the oral route or for ED properties.

*Action for human health endpoints*

CCHs to be opened will include all substances of the registrants' categories and the read-across performed will be assessed in this context. In the absence of reliable information on fertility, CCH will inform on potential hazards for fertility. It will also inform about the developmental potency of substances with incompliant data and not yet classified for developmental toxicity. For the three DTPA substances (EC 200-652-8, EC 205-391-3, EC 404-290-3) with harmonised classification for developmental toxicity 1B, further studies with regards to developmental toxicity will not be requested. In addition, EC 439-840-1 (EDDS) and EC 227-105-6 (EDDA) which are more different in structure and lack data are also proposed for CCH to substantiate the applicability of the hypothesis for the whole group.

*Environmental hazard*

All of the substances in the group are potentially persistent, mobile and likely chronically toxic to the aquatic environment. From this group, 2 out of the 22 registered substance are properly self-classified in the registrations as Aquatic Chronic 2. The registrations of the rest of the substances do not include environmental hazard classifications. Notified classifications as Aquatic chronic 2 or 3 are available for 7 out of the 22 substances. While harmonised classification (CLH) is available for the substances DTPA (EC 200-652-8), DTPA-Na5 (EC 205-391-3) and DTPA-K5 (EC 404-290-3) it does not include classification for aquatic hazard.

Despite the fact that the data density on long term aquatic toxicity is fairly low, classification as Aquatic chronic 2 might be appropriate for all the substances in the group.

Data generation via CCH would provide the data for a more robust classification for the substances of this group. While the validity of read-across for ecotoxicity will need to be confirmed and would most likely depend on the stability constants of each substances, it is considered to be likely plausible. The EU RAR for EDTA (EC 200-449-4) in 2004 also concluded that the substance is persistent and there is hazard to the aquatic environment and due to the high exposure, there is a need to limiting the risk to the aquatic environment. Compliance check and if needed substance evaluation could be used to clarify persistency, mobility, and toxicity for potential future regulatory action. If such property exists after generation of data, these properties will need to be considered as well and may be confirmed via SVHC identification and inclusion in the Candidate list.

*Harmonised classification and labelling*

The first step of the regulatory risk management, should the hazard exist, is the confirmation of hazard via harmonised classification (CLH) as reproductive (developmental) toxicity, STOT RE and Aquatic chronic hazards for all EDTA-like acids and salts of this group. However, based on the lower reproductive potency of EDTA-like substances with lower chelating potency compared to DTPA, the priority for preparing CLH proposal(s) might be considered. When preparing the proposals, it may be considered what would be the best way to develop them, for instance whether to make a proposal for the group of substances, to submit them individually or jointly.

A harmonised classification as Repro 1B i) will require company level risk management measures (RMM) under the OSH legislation for workers, to be in place, ii) is needed or highly recommended for further regulatory processes under REACH and iii) is a prerequisite to restrict the presence of the substances in consumer mixtures, by means of the restriction entry 30.

In addition, substances that are mutagenic, carcinogenic, or toxic to reproduction should not be used in food contact materials or articles without previous authorisation (Regulation (EU) No 10/2011). EFSA (on its own initiative or following a request from a Member State or the Commission) may re-evaluate the authorisation for EDTA (CAS 60-00-4) for use as a food contact material with a generic specific migration limit of 60 mg/kg.

*Uses*

The following professional uses such as water softeners, water treatment, adsorbents, fertilisers, plant protection products, de-icing products, washing and cleaning products, cosmetic and personal care products, pharmaceuticals, polishes and wax blends, metal working fluids, coating and paints, ink and toners, paper and board treatment products, textile dyes, and impregnating products, leather treatment products, metal surface treatment products, and laboratory chemicals, 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. Professional end-uses reported in the CSRs for EDTA and several EDTA salts include the use of granular formulations (up to 20 %), liquid formulations (up to 10 % for air-dispensive formulations and up to 55 % for not air-dispensive formulations), powdery formulations of medium

dustiness (up to 5 %), powdery products (up to 100 %), and the formulation of medium dustiness products (up to 100 % in full-day shift).

Consumers may be co-exposed to the substances used by professionals; the widespread uses mentioned for professionals are usually also uses for consumers.

When re-evaluating the authorisation of ferric sodium EDTA (EC 239-802-2) as a novel food ingredient used as a source of iron, the EFSA Panel on Food Additives and Nutrient Sources added to Food (ANS) concluded that there is no sound scientific justification to increase the current ADI for EDTA of 1.9 mg/kg body weight per day and recommended that additional toxicological data should be provided to address the shortcomings in the available toxicity database prior to the re-evaluation of calcium disodium EDTA[9].

*OEL*

No EU or national OELs are available. A restriction or an OSH-OEL could quantitatively address the concern for damage to the respiratory tract (STOT RE 2) of workers with repeated inhalation exposure by proposing either binding long-term inhalation DNELs for workers or OELs. At this screening level, it is not possible to conclude in favour of one instrument over another (REACH DNEL or OSH OEL).

*Restriction*

A **restriction of the substances from the whole group as such or in mixtures (concentration limit in mixtures) used by professionals** may be suggested after considering CLH.

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[10] which aims to extend to professional users under REACH the level of protection granted to consumers.

To prevent regrettable substitution, the further need for EU regulatory risk management for the substances of the current group should not be limited to substances registered under REACH but to all substances of this group. In addition, due to the identified potential risk for workers, a potential restriction should not be limited to professional use but also to industrial uses.

Taken together, a restriction of professional uses seems to be the most appropriate regulatory risk management option for this whole group of EDTA-related acids and salts with chelating potential in case risk(s) related to reproductive (developmental) toxicity would be identified.

A restriction for EDTA and its salts for consumer uses in food contact materials does not seem to be indicated. EDTA and all salts can be used in food contact materials with maximum overall migration of 60 mg/kg food (Regulation (EU) No. 10/2011). Furthermore, EDTA, DTPA and HEDTA are listed in the BfR recommendations (mainly in the recommendation on paper & board) and evaluated as safe when used in food contact materials from paper and board under the given conditions.

[9] https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2018.5369

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

# 3 Conclusions and actions

The conclusions and actions proposed in the table below are based on the REACH and CLP information available at the time of the assessment by ECHA. 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 will be updated and conclusions and actions revisited.

| EC number (acronym) | Human Health Hazard | Environmental Hazard | Relevant use(s) & exposure potential | Last foreseen action | Action |
|---|---|---|---|---|---|
| **200-449-4 (EDTA)*<br>200-573-9 (EDTA-Na4)*<br>200-652-8 (DTPA)*<br>205-358-3 (EDTA-Na2)*<br>205-381-9 (HEDTA-Na3)*<br>205-391-3 (DTPA-Na5)*<br>205-758-8 (EDTA-Na3)*<br>217-895-0 (EDTA-K2)<br>227-105-6 (EDDA)<br>240-073-8 (EDTA-(NH4)3)*<br>241-543-5 (EDTA-K3)<br>244-063-4 (EDTA-(NH4)2)*<br>404-290-3 (DTPA-K5)*<br>416-530-4 (EDDS-Na3)<br>439-840-1 (EDDS)** | Known or potential hazard for reproductive toxicity<br>for STOT RE | Known or potential hazard for aquatic toxicity<br>for persistency and mobility | Industrial and very wide professional and consumer uses (up to 38 PCs) | Need for EU RRM: Restriction<br><br>Justification: Restriction could address several potential risks related to:<br>- reproductive toxicity (e.g., use by professionals),<br>- damage to the respiratory tract (e.g., EU-wide exposure limit for worker under REACH or OSH)<br>- risks to the environment (e.g., high emissions from industrial use without appropriate wastewater treatment, biodegradable alternatives) | **First step:**<br>CCH:<br>200-449-4*<br>200-573-9*<br>200-652-8*<br>205-358-3*<br>205-381-9*<br>205-391-3*<br>205-758-8*<br>227-105-6<br>240-073-8*<br>244-063-4<br>404-290-3*<br>439-840-1,<br>* Registrants' category<br>**Next steps (if hazards and risks confirmed):**<br>CLH, including the 3 substances with CLH due to missing CLH for aquatic toxicity<br>Restriction (group) |

| EC number (acronym) | Human Health Hazard | Environmental Hazard | Relevant use(s) & exposure potential | Last foreseen action | Action |
|---|---|---|---|---|---|
| **453-140-3 (DTPA-BHEA)** | | | Limited industrial and professional uses | | **Next steps (if hazards and risks confirmed):**<br>CLH (group)<br>Restriction (group) |
| **205-759-3 (HEDTA)***<br>**227-743-5 (EDTA-K4)**<br>**235-979-5 (DTPA-Na3)**<br>**236-308-9 (trans-CDTA)**<br>**245-022-3 (EDTA-(NH4)4)***<br>**601-640-9 (DTPA-BMA)**<br>**607-286-1 (DTPABA)**<br>**700-166-0 (trans-CDTA-(NH4)3)**<br>**942-821-5 (EDTA-EDDA)**<br>**947-397-5 (AEA-EDDA-Na3)** | | | Industrial uses only | | **First step:**<br>CCH:<br>205-759-3*<br>235-979-5<br>* Registrants' category<br>**Next steps (if hazards and risks confirmed):**<br>CLH (group)<br>Restriction (group) |
| **400-400-9 (PDTA)**<br>**426-360-2 (BOPTA)**<br>**443-130-7 (EDDS.3H2O)**<br>**443-310-5 (MEDTA-xNa)** | | | No information on uses | | **Next steps (if hazards and risks confirmed):**<br>CLH (group)<br>Restriction (group) |
| **207-582-7 (CDTA)**<br>**600-485-4 (EDTA-Na4.2H2O)**<br>**605-842-8 (EDDS-Na3)**<br>**613-386-6 (EDTA-Na2.2H2O)**<br>**614-059-0 (EDTA-Na4.3H2O)**<br>**615-726-9 (DTPA-K5)**<br>**939-615-2 (EDTrA-Na3-NaOH)** | | | No uses | | |

# Annex 1: Overview of classifications

Data extracted on 29 April 2022

| EC/ List No | CAS No | Acronym | Harmonised classification | Classification in registrations[11] |
|---|---|---|---|---|
| **200-449-4** | 60-00-4 | EDTA | Eye Irrit. 2 H319 | **Acute Tox. 4** H332<br>Eye Irrit. 2 H319<br>**STOT Rep. Exp. 2** H373, affected organs: Respiratory Tract |
| **200-573-9** | 64-02-8 | EDTA-Na4 | **Acute Tox. 4** H302<br>Eye Damage 1 H318 | **Acute Tox. 4** H302<br>Acute Tox. 4 H332<br>Eye Damage 1 H318<br>**STOT Rep. Exp. 2** H373, affected organs: Respiratory tract<br>Met. Corr. 1 H290 [intermediate (active)] |
| **200-652-8** | 67-43-6 | DTPA | **Repr. 1B**; H360 (SCL ≥ 3 %)<br>Acute Tox. 4 H332<br>**STOT RE 2** H373 (inhalation ATE 1.5 mg/L (dust or mist))<br>Eye Irrit. 2 H319 | Repr. 2 H361 [intermediate (active)]<br>**Acute Tox. 4** H303 [intermediate (active)]<br>**Repr. 2 H361,** specific effect: Substance can cause a zinc deficiency that may lead to developmental toxicity<br>Acute Tox. 4 H332<br>Eye Irrit. 2 H319<br>**STOT Rep. Exp. 2** H373, affected organs: Respiratory tract |
| **205-358-3** | 139-33-3 | EDTA-Na2 | -- | **Acute Tox. 4** H332<br>**STOT Rep. Exp. 2** H373, affected organs: Respiratory tract |
| **205-381-9** | 139-89-9 | HEDTA-Na3 | -- | **Acute Tox. 4** H302<br>Eye Damage 1 H318 |
| **205-391-3** | 140-01-2 | DTPA-Na5 | **Repr. 1B**; H360 (SCL ≥ 3 %)<br>Acute Tox. 4 H332<br>**STOT RE 2** H373 (inhalation ATE 1.5 mg/L (dust or mist)) | Eye Irrit. 2 H319 [intermediate (active)]<br>Met. Corr. 1 H290 [intermediate (active)]<br>Repr. 2 H361 [intermediate (active)]<br>**Repr. 2 H361,** specific effect: Substance can cause a zinc deficiency that may lead to developmental toxicity, specific concentration: >3<br>**Acute Tox. 4** H332<br>**STOT Rep. Exp. 2** H373, affected organs: Respiratory Tract |
| **205-758-8** | 150-38-9 | EDTA-Na3 | -- | **Acute Tox. 4** H302<br>Acute Tox. 4 H332<br>Eye Damage 1 H318<br>**STOT Rep. Exp. 2** H373, affected organs: Respiratory tract |
| **205-759-3** | 150-39-0 | HEDTA | -- | **Acute Tox. 4** H302<br>Skin Irrit. 2 H315<br>Eye Damage 1 H318 |

[11] The column gives the classifications in registrations received under REACH. Additional classifications in intermediate and in inactive registrations (if any) are annotated and displayed last. For each classification the table includes information on the hazard category, the hazard statement and any available information on specific effects (relevant for reproductive toxicity), specific concentration limits, M-Factors and affected organs. Two classifications differing in any of these aspects are considered different and are repeated in the table. The columns "Classifications in registrations" and "Classifications in C&L notifications" are empty if there are no Registrations/C&L notifications (hazard is unknown). The value '-' is displayed on the same columns when there are (relevant) submissions but they do not contain self-classifications (substance is not hazardous).

| EC/ List No | CAS No | Acronym | Harmonised classification | Classification in registrations[11] |
|---|---|---|---|---|
| **207-582-7 not regist.** | 482-54-2 | CDTA | -- | - |
| **217-895-0** | 2001-94-7 | EDTA-K2 | -- | **Acute Tox. 4** H332<br>**STOT Rep. Exp. 2** H373, affected organs: Respiratory Tract |
| **227-105-6** | 5657-17-0 | EDDA | -- | **Acute Tox. 4** H302<br>Aquatic Chronic 2 H411 |
| **227-743-5** | 5964-35-2 | EDTA-K4 | -- | **Acute Tox. 4** H302<br>Acute Tox. 4 H332<br>Eye Damage 1 H318<br>**STOT Rep. Exp. 2** H373, affected organs: Respiratory tract |
| **235-979-5** | 13078-36-9 | DTPA-Na3 | -- | **Repr. 2 H361** |
| **236-308-9** | 13291-61-7 | trans-CDTA | -- | **Acute Tox. 4** H332<br>Eye Irrit. 2 H319 |
| **240-073-8** | 15934-01-7 | EDTA-(NH4)3 | -- | **Acute Tox. 4** H332 [Article 10 (inactive)]<br>**STOT Rep. Exp. 2** H373, affected organs: Respiratory Tract [Article 10 (inactive)] |
| **241-543-5** | 17572-97-3 | EDTA-K3 | -- | **Acute Tox. 4** H332<br>**STOT Rep. Exp. 2** H373, affected organs: Respiratory tract |
| **244-063-4** | 20824-56-0 | EDTA-(NH4)2 | -- | **Acute Tox. 4** H332<br>**STOT Rep. Exp. 2** H373, affected organs: Respiratory Tract |
| **245-022-3** | 22473-78-5 | EDTA-(NH4)4 | -- | **Acute Tox. 4** H332<br>Eye Irrit. 2 H319<br>**STOT Rep. Exp. 2** H373, affected organs: Respiratory Tract |
| **400-400-9 NONs** | 1939-36-2 | PDTA | Acute Tox. 4 H302<br>Eye Damage 1 H318 | **Acute Tox. 4** H302 [Article 10 (inactive)]<br>Eye Irrit. 2 H319 [Article 10 (inactive)]<br>**Repr. 2** H361, specific concentration: >=3 [Article 10 (inactive)]<br>Eye Damage 1 H318 [Article 10 (inactive)] |
| **404-290-3** | - | DTPA-K5 | **Repr. 1B**; H360 (SCL ≥ 3 %)<br>Acute Tox. 4 H332<br>**STOT RE 2** H373 (inhalation ATE 1.5 mg/L (dust or mist))<br>Eye Irrit. 2 HH319 | **Repr. 2 H361, specific effect: substance can cause a zinc deficiency that may lead to developmental toxicity**<br>**Acute Tox. 4** H332<br>Eye Irrit. 2 H319<br>**STOT Rep. Exp. 2** H373, affected organs: Respiratory tract |
| **416-530-4** | - | EDDS-Na3 | -- | - |
| **426-360-2 not regist.** | - | BOPTA | -- | |
| **439-840-1** | - | EDDS | -- | - |
| **443-130-7 not regist.** | - | | -- | |
| **443-310-5 not regist.** | - | - | -- | |
| **453-140-3** | - | DTPA-BHEA | -- | - |
| **600-485-4 not regist.** | 10378-23-1 | EDTA-Na4.2H2O | -- | - |

| EC/ List No | CAS No | Acronym | Harmonised classification | Classification in registrations[11] |
|---|---|---|---|---|
| **601-640-9** | 119895-95-3 | DTPA-BMA | -- | Aquatic Chronic 2 H411 [intermediate (active)]<br>**Repr. 2 H361** [intermediate (active)]<br>Eye Irrit. 2 H319 [intermediate (active)] |
| **605-842-8 not regist.** | 178949-82-1 | EDDS-Na3 | -- | - |
| **607-286-1** | 23911-26-4 | DTPABA | -- | Eye Irrit. 2 H319 [intermediate (active)]<br>**Repr. 2 H361** [intermediate (active)] |
| **613-386-6 not regist.** | 6381-92-6 | EDTA-Na2.2H2O | -- | - |
| **614-059-0 not regist.** | 67401-50-7 | EDTA-Na4.3H2O | -- | |
| **615-726-9 not regist.** | | DTPA-K5 | | - |
| **700-166-0** | | trans-CDTA-(NH4)3 | -- | - |
| **939-615-2** | - | EDTrA-Na3-NaOH | -- | |
| **942-821-5** | - | EDTA-EDDA | -- | Eye Irrit. 2 H319 [intermediate (active)] |
| **947-397-5** | | AEA-EDDA-Na3 | -- | Eye Damage 1 H318<br>**Skin Sens. 1** H317 |

(*) the number in brackets indicates the number of notifications received. Each notification can represent a group of notifiers; therefore the number may differ from the C&L inventory which displays number of notifiers.

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

Data extracted on 17.03.2022

| Main types of applications structured by products or article types | EC/List numbers | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 200-449-4 | 200-573-9 | 200-652-8 | 205-358-3 | 205-381-9 | 205-391-3 | 205-758-8 | 205-759-3 | 217-895-0 | 227-105-6 | 227-743-5 | 235-979-5 | 236-308-9 | 240-073-8 | 241-543-5 | 244-063-4 | 245-022-3 | 400-400-9 | 404-290-3 | 416-530-4 | 439-840-1 | 453-140-3 | 947-397-5 |
| **PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | **C** | **C** | | |
| **PC 36: Water softeners** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | I | | F, I, **P**, **C** | | **C** | | |
| **PC 37: Water treatment chemicals** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | I | | F, I, **P**, **C** | | | | |
| **PC 2: Adsorbents** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | | F, I | | | F, I, **P** | | | F, I, **P** | | F, I, **P** | | | F, I, **P** | | **C** | | |
| **PC 11: Explosives** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | | F, I | | | F, I, **P** | | | F, I, **P** | | F, I, **P** | | | F, I, **P** | | | | |
| **PC 12: Fertilisers** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | **C** | **C** | | |

| Main types of applications structured by products or article types | EC/List numbers | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 200-449-4 | 200-573-9 | 200-652-8 | 205-358-3 | 205-381-9 | 205-391-3 | 205-758-8 | 205-759-3 | 217-895-0 | 227-105-6 | 227-743-5 | 235-979-5 | 236-308-9 | 240-073-8 | 241-543-5 | 244-063-4 | 245-022-3 | 400-400-9 | 404-290-3 | 416-530-4 | 439-840-1 | 453-140-3 | 947-397-5 |
| **PC 27: Plant protection products** | F, I, **P** | F, I, **P**, **C** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | | F, I | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P** | | F, I, **P** | | | F, I, **P** | F, I, **P**, **C** | **C** | | |
| **PC 4: Anti-freeze and de-icing products** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P**, **C** | F, I, **P** | | F, I | | | F, I, **P** | | | F, I, **P** | | F, I, **P** | | | F, I, **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, I, **P**, **C** | | F, I | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | I | | F, I, **P**, **C** | F, I, **P**, **C** | **C** | I, **P** | |
| **PC 8: Biocidal products (e.g. disinfectants, pest control)** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | **C** | **C** | | |
| **PC 28: Perfumes, fragrances** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P** | | F, I | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | **C** | | |
| **PC 3: Air care products** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P** | | **C** | | |
| **PC 39: Cosmetics, personal care products** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C**, **A** | F, I, **P**, **C** | F, I, **C** | F, **P**, **C** | F, I | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | F, I, **P**, **C** | **C** | | |
| **PC 29: Pharmaceuticals** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, **P**, **C** | F, I | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | **C** | | |

| Main types of applications structured by products or article types | EC/List numbers | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 200-449-4 | 200-573-9 | 200-652-8 | 205-358-3 | 205-381-9 | 205-391-3 | 205-758-8 | 205-759-3 | 217-895-0 | 227-105-6 | 227-743-5 | 235-979-5 | 236-308-9 | 240-073-8 | 241-543-5 | 244-063-4 | 245-022-3 | 400-400-9 | 404-290-3 | 416-530-4 | 439-840-1 | 453-140-3 | 947-397-5 |
| **PC 31: Polishes and wax blends** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | **C** | | |
| **PC 15: Non-metal-surface treatment products** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | | | |
| **PC 24: Lubricants, greases, release products** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | **C** | | |
| **PC 25: Metal working fluids** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P**, **C** | F, I, **P** | | F, I | | | F, I, **P** | | | F, I, **P** | | F, I, **P** | | | F, I, **P** | | | | |
| **PC 16: Heat transfer fluids** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P**, **C** | F, I, **P** | | F, I | | | F, I, **P** | | | F, I, **P** | | F, I, **P** | | | F, I, **P** | | | | |
| **PC 17: Hydraulic fluids** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P**, **C** | F, I, **P** | | F, I | | | F, I, **P** | | | F, I, **P** | | F, I, **P** | | | F, I, **P** | | | | |
| **PC 13: Fuels** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P**, **C** | F, I, **P** | F, I, **P** | | F, I | | | F, I, **P** | | | F, I, **P** | | F, I, **P** | | | F, I, **P** | | **C** | | |

| Main types of applications structured by products or article types | EC/List numbers | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 200-449-4 | 200-573-9 | 200-652-8 | 205-358-3 | 205-381-9 | 205-391-3 | 205-758-8 | 205-759-3 | 217-895-0 | 227-105-6 | 227-743-5 | 235-979-5 | 236-308-9 | 240-073-8 | 241-543-5 | 244-063-4 | 245-022-3 | 400-400-9 | 404-290-3 | 416-530-4 | 439-840-1 | 453-140-3 | 947-397-5 |
| **PC 32: Polymer preparations and compounds** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | | | F, I, **P**, **C** | F, I | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | | | F, I |
| **PC 1: Adhesives, sealants** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | **C** | | |
| **PC 9c: Finger paint** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | **C** | | |
| **PC 9b: Fillers, putties, plasters, modelling clay** | F, I, **P**, **C**,7) | F, I, **P**, **C**,4) | F, I, **P**, **C** | F, I, **P**, **C**,2) | F, I, **P**, **C** | F, I, **P**, **C**,0) | | F, I | I, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **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** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | **C** | | |
| **PC 18: Ink and toners** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | **C** | | |
| **PC 26: Paper and board treatment products** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | | | |

| Main types of applications structured by products or article types | EC/List numbers | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 200-449-4 | 200-573-9 | 200-652-8 | 205-358-3 | 205-381-9 | 205-391-3 | 205-758-8 | 205-759-3 | 217-895-0 | 227-105-6 | 227-743-5 | 235-979-5 | 236-308-9 | 240-073-8 | 241-543-5 | 244-063-4 | 245-022-3 | 400-400-9 | 404-290-3 | 416-530-4 | 439-840-1 | 453-140-3 | 947-397-5 |
| **PC 34: Textile dyes, and impregnating products** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | **C** | | |
| **PC 23: Leather treatment products** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | **C** | | |
| **PC 14: Metal surface treatment products** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | | | |
| **PC 38: Welding and soldering products, flux products** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | | F, I | | | F, I, **P** | | | F, I, **P** | | F, I, **P** | | | F, I, **P** | | | | |
| **PC 7: Base metals and alloys** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | | F, I | | | F, I, **P** | | | F, I, **P** | | F, I, **P** | | | F, I, **P** | | | | |
| **PC 33: Semiconductors** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | | F, I | | | F, I, **P** | | | F, I, **P** | | F, I, **P** | | | F, I, **P** | | | | |
| **PC 21: Laboratory chemicals** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | | F, I | F, I, **P**, **C** | | F, I, **P** | | F | F, I, **P** | F, I, **P** | F, I, **P** | | | F, I, **P** | | **C** | | |
| **PC 19: Intermediate** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | | F, I | I | I | F, I, **P** | | | F, I, **P** | | F, I, **P** | I | | F, I, **P** | | | | |

| Main types of applications structured by products or article types | EC/List numbers | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 200-449-4 | 200-573-9 | 200-652-8 | 205-358-3 | 205-381-9 | 205-391-3 | 205-758-8 | 205-759-3 | 217-895-0 | 227-105-6 | 227-743-5 | 235-979-5 | 236-308-9 | 240-073-8 | 241-543-5 | 244-063-4 | 245-022-3 | 400-400-9 | 404-290-3 | 416-530-4 | 439-840-1 | 453-140-3 | 947-397-5 |
| **PC 40: Extraction agents** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | F, I, **P** | | F, I | F, I, **P**, **C** | | F, I, **P** | | | F, I, **P** | | F, I, **P** | | | F, I, **P** | | | | |
| **PC41: Oil and gas exploration or production products** | | | | | | | | | | | | | | | | | I | | | | | | |
| **PC 30: Photo-chemicals** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | F, I, **P**, **C** | | F, I | | | F, I, **P**, **C** | | | F, I, **P**, **C** | | F, I, **P**, **C** | | | F, I, **P**, **C** | | **C** | | |

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

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

Data extracted on 7. April 2022

| EC/List number | RMOA | Authorisation | | Restriction* | CLH | Actions not under REACH/ CLP* |
|---|---|---|---|---|---|---|
| | | Candidate List | Annex XIV | Annex XVII | Annex VI (CLP) | |
| 200-449-4 | | | | | | EU RAR |
| 200-652-8 | YES | | | | YES | |
| 205-391-3 | YES | | | | YES | |
| 404-290-3 | | | | | YES | |

*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 and 40).