

BASEL CONVENTION

Secretariat of the Basel Convention

United Nations Environment Programme

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Geneva, 23 January 2024

Subject: Review of Annexes I, III and IV to the Basel Convention – Invitation for comments by 11 March 2024

Dear Sir, dear Madam,

By its decision BC-16/15 on Providing further legal clarity the sixteenth meeting of the Conference of the Parties to the Basel Convention, among other things:

(a) Requested the expert working group on the review of Annexes to consider the proposals by the European Union to amend Annex IV and certain entries in Annexes II and IX to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (UNEP/CHW.15/13/Add.1) and the recommendations and findings of the expert working group (UNEP/CHW.16/INF/26, annexes), taking into account decision BC-15/19, the discussions at the fifteenth meeting of the Conference of the Parties, the discussions at the thirteenth meeting of the Open-ended Working Group and the discussions at the sixteenth meeting of the Conference of the Parties (UNEP/CHW.16/INF/26/Rev.1, annex II), and develop revised amendment proposals on Annex IV for consideration by the Open-ended Working Group at its fourteenth meeting (OEWG-14);

(b) Requested the expert working group on the review of Annexes to continue to develop draft recommendations on the review of Annexes I and III, taking into account the discussions at the thirteenth meeting of the Open-ended Working Group, the discussions at the sixteenth meeting of the Conference of the Parties and the written general comments submitted at that meeting (UNEP/CHW.16/INF/27/Rev.1, annex III), for consideration by the OEWG-14;

(c) Decided to consider at its seventeenth meeting the revised amendment proposals for Annex IV, the draft recommendations on the review of Annexes I and III, taking into account the outcome of the OEWG-14 and any further developments from the expert working group after the OEWG-14.

During the first part of its sixth meeting (28 November - 2 December 2023, Geneva), the expert working group developed revised amendment proposals on section A of Annex IV to the Convention. The expert working group also made progress towards developing revised amendment proposals on section B of Annex IV to the Convention by developing a revised version of its recommendations. The expert working group further continued to develop draft recommendations on the review of Annexes I and III. The expert working group plans to meet for a second part of its sixth meeting after the OEWG-14.

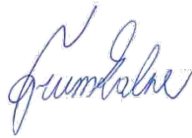
You will find attached:

- (a) The revised amendment proposals on section A of Annex IV to the Convention
- (b) The revised version of the recommendations on section B of Annex IV (status 2 December 2023)
- (c) Draft recommendations on the review of Annex I (status 2 December 2023)
- (d) Draft recommendations on the review of Annex III (status 2 December 2023),

developed by the expert working group during the first part of its sixth meeting, for consideration by the OEWG-14.

Your comments thereon to the Secretariat (juliette.kohler@un.org) are invited by **Monday 11 March 2024**. Comments received will be made available for consideration by the OEWG-14.

Yours sincerely,



For: Rolph Payet
Executive Secretary

Encl:

Revised amendment proposals to Section A of Annex IV, including a general introduction for Annex IV and captions and introductory texts for sections A and B of Annex IV, developed by the expert working group on the review of Annexes during the first part of its sixth meeting (28 November – 2 December 2023)

I. General introduction for Annex IV

**Annex IV
Disposal operations**

There are two categories of disposal operations, namely final disposal operations and recovery operations. Section A encompasses final disposal operations and Section B recovery operations.

This Annex also covers in both sections A and B disposal operations that occur prior to submission to any of the operations in the respective section.³

This Annex covers all disposal operations, regardless of their legal status and regardless of whether they are considered to be environmentally sound.

The use of “e.g.” in Annex IV indicates that any list of examples is non-exhaustive.

II. Captions and introductory texts for sections A and B of Annex IV

A. FINAL DISPOSAL OPERATIONS

A final disposal operation is an operation which is not a recovery operation even where the operation has as a secondary consequence the reclamation of substances or energy.

B. RECOVERY OPERATIONS

A recovery operation is an operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy.

III. Section A of Annex IV

D1 Deposit into or onto land, (e.g., landfill, etc.)

Deposit into or onto land, (e.g. non engineered landfill, dumpsites) other than by any operations D2 to D5, or D12

D2 Land treatment, (e.g., biodegradation of liquid or sludgy discards in soils, etc.)

Treatment through interaction with land other than covered by R10 in Section B (e.g. biodegradation of liquids or sludges in soil

D3 Deep injection, (e.g., injection of pumpable discards into wells, salt domes of naturally occurring repositories, etc.)

Deep injection (e.g. injection into wells, salt domes of naturally occurring repositories)

³ See operations D8, D9, D13, D14, D15 and D19 in section A, and operations R12 and R13 in Section B.

- D4 Surface impoundment, (e.g., placement of liquid or sludge discards into pits, ponds or lagoons, etc.)**
Surface impoundment (e.g. placement of liquids or sludge into pits, basins, ponds, tailings dams)
- D5 Specially engineered landfill, (e.g., placement into lined discrete cells which are capped and isolated from one another and the environment, etc.)**
Deposit in an engineered landfill isolated from the environment
- D6 Release into a water body except seas/oceans**
Status quo
- D7 Release into seas/oceans including sea-bed insertion**
Status quo
- D8 Biological treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations in Section A**
Biological treatment not specified elsewhere in section A, prior to submission to any of the operations in Section A (e.g. aerobic or anaerobic processes such as activated sludge treatment, aerated lagoons and stabilisation ponds)
- D9 Physico chemical treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations in Section A, (e.g., evaporation, drying, calcination, neutralization, precipitation, etc.)**
Manual treatment, physical/mechanical treatment (e.g. separation, dismantling, size reduction, evaporation, drying, autoclaving), physical/chemical treatment (e.g. solvent extraction), chemical treatment (e.g. neutralization, chemical precipitation, oxidation, reduction, calcination) or immobilization (e.g. stabilization, solidification, encapsulation) not specified elsewhere in section A prior to submission to any of the operations in section A.
- D10 Incineration on land**
Thermal treatment on land other than covered by R1 in Section B (e.g. incineration , co-incineration).
- D11 Incineration at sea**
Thermal treatment at sea (e.g. incineration, co-incineration)
- D12 Permanent storage (e.g., emplacement of containers in a mine, etc.)**
Status quo
- D13 Blending or mixing prior to submission to any of the operations in Section A**
Mixing, including blending, prior to the submission to any operation in Section A
- D14 Repackaging prior to submission to any of the operations in Section A**
Status quo
- D15 Storage pending any of the operations in Section A**
Temporary storage prior to submission to any of the operations in section A

NEW OPERATION

- D16 Release to the atmosphere (e.g. venting of compressed or liquefied gases)**

Revised recommendations on section B of Annex IV developed by the expert working group on the review of Annexes during the first part of its sixth meeting (28 November – 2 December 2023)

R1 Use as a fuel (other than in direct incineration) or other means to generate energy

1. Thermal treatment with the principal result to generate energy [including through use as a fuel] [except where covered by R15] (e.g. [use as a fuel,] incineration with energy recovery)

R2 Solvent reclamation/regeneration

0. Status quo

1. *Delete and merge with R3 option1 and R5 option1*

R3 Recycling/reclamation of organic substances which are not used as solvents

0. Status quo

1. Recycling of organic substances (e.g. [regeneration,] physical/mechanical treatment, chemical treatment)

R4 Recycling/reclamation of metals and metal compounds

1. Recycling [or reclamation] of metals and metal compounds (e.g. pyrometallurgy, smelting, hydrometallurgy, physical/mechanical treatment)

R5 Recycling/reclamation of other inorganic materials

0. Status quo

1. Recycling [or reclamation] of inorganic materials other than covered by R4 [, ... R6, R7, R8...] (e.g. [regeneration,] physical/mechanical treatment, chemical treatment)

R6 Regeneration of acids or bases

0. Status quo

1. *Delete R6 and merge with R3 option1 and R5 option1*

R7 Recovery of components used for pollution abatement

0. Status quo

1. *Delete R7 and merge with R3 option1, R4 option1 and R5 option1*

R8 Recovery of components from catalysts

0. Status quo

1. *Delete R8 and merge with R3 option1, R4 option1 and R5 option1*

R9 Used oil re-refining or other reuses of previously used oil

1. Recycling or re-refining of used oil (e.g. mineral oil, hydrocarbons-based oils)

2. *Delete and merge with R3 option1*

R10 Land treatment resulting in benefit to agriculture or ecological improvement

1. Treatment through interaction with land other than in D2 in Section A resulting in benefit to agriculture or ecological improvement [(e.g. composting)]

2. *Delete and merge with R12 quarter under R12 option 2*

R11 Uses of residual materials obtained from any of the operations numbered R1-R10

0. Status quo

1. *Delete*

R12 Exchange of wastes for submission to any of the operations numbered R1-R11

0. Status quo

1. *Keep status quo and add option 2 as new operations*

2. *Split and replace by four operations mirroring D operations:*

R12 (*mirroring D8*)

Biological treatment [not specified elsewhere in Section B,] [other than covered by ...] prior to submission to any of the operations in Section B [(e.g. aerobic or anaerobic processes such as activated sludge treatment, aerated lagoons and stabilisation ponds)]

R12bis (*mirroring D9*)

[Manual treatment (e.g. separation),] Physical/mechanical treatment [other than covered by R12ter] (e.g. [separation, size reduction,] evaporation, drying, [autoclaving]), physical/chemical treatment (e.g. solvent extraction) or chemical treatment (e.g. neutralization, chemical precipitation[, oxidation, reduction]) [not specified elsewhere in Section B] prior to submission to any of the operations in Section B

R12ter (*mirroring D13*)

[Mixing, including blending, prior to the submission to any operation in Section B]

R12quater

[Other treatment than covered by R12, R12bis, R12ter and R16 above prior to submission to any of the operations in Section B.]

R13 Accumulation of material intended for any operation in Section B

1. Temporary storage prior to submission to any of the operations in Section B

NEW OPERATIONS

[R14 Preparing for re-use (e.g. checking, cleaning, repair, refurbishment)]

[R15 Co-processing in a cement kiln]

R16 Repackaging prior to submission to any of the operations in Section B

[R17 Other treatment than covered by R1 option2, R3 option1, R4 option1, R5 option1 and R14 above]

[Draft r] [R]ecommendations by the expert working group on the review of Annexes for possible amendment proposals to Annex I, including whether any additional constituents in relation to plastic waste should be added to Annex I, and findings of the expert working group on the consequential implications of the review of Annex I to the Convention (status 2 December 2023)

I. Possible amendment proposals to Annex I of the Basel Convention

1. The expert working group on the review of Annexes recommends that possible amendment proposals to Annex I should be based on one or more of the objectives of the review of the annex, as set out in the annex to decision BC-13/2, which are to:

- (a) Improve/update the description of categories of wastes in Annex I;
- (b) Improve environmental controls by including any additional categories of wastes in Annex I that occur in practice; and
- (c) Clarify the descriptions in Annex I to address conflicts or overlaps.

2. Members of the expert working group expressed different views as to whether the constituents in Annex I should be reorganized and listed according to subheadings. Members of the expert working group also expressed different views on the extent to which to balance the benefits of proposed changes to Annex I with the resources required and risks involved when giving effect to them (e.g. the need to amend national legislation/regulations and for Competent Authorities and other stakeholders involved in transboundary movements to adjust their operations).¹

3. The expert working group on the review of Annexes also recommends that further work on the review of Annex I be based on the general issues and the [draft] recommended options for possible amendment proposals to Annex I set out in appendix I to the present recommendations.

II. Whether any additional constituents in relation to plastic waste should be added to Annex I to the Convention

4. The expert working group on the review of Annexes also recommends that further work on whether any additional constituents in relation to plastic waste should be added to Annex I be based on the proposal set out in appendix II to the present [draft] recommendations.²

III. Findings of the expert working group on the consequential implications of the review of Annex I to the Convention

[...]³

¹ See the “General issues” listed in Appendix I to the [draft] recommendations by the expert working group, paragraphs 14–16 of the report of the 17–21 May 2021 sessions of the fourth meeting of the EWG, paragraphs 71–73 of the 11–15 October 2021 sessions of the fourth meeting of the EWG, and the report of the fifth meeting of the EWG.

² See paragraph 61 of the report of the 17–21 May 2021 sessions of the fourth meeting of the EWG and paragraph 96 of the 11–15 October 2021 sessions of the fourth meeting of the EWG. See also paragraphs 68 of the report of the fifth meeting of the EWG.

³ See paragraph 62 of the report of the 17–21 May sessions of the fourth meeting of the EWG and paragraph 97 of the 11–15 October sessions of the fourth meeting of the EWG.

Appendix I to the [draft] recommendations by the expert working group pertaining to Annex I to the Convention

1. The following are [draft] recommended options prepared by the expert working group on the review of the Annexes during its fourth meeting (online on 17–21 May 2021, and 11–15 October 2021), fifth meeting (Geneva, 5-7 December 2022) and part I of its sixth meeting (Geneva, 28 November-1 December 2023) for possible amendments to Annex I.
2. The expert working group discussed general issues and reviewed each entry set out in Annex I. The [draft] recommended options do not necessarily reflect the views of all the members.
3. Each option was supported by at least one member of the expert working group. For any option only supported by one member, the option is bracketed. The status quo, namely the current drafting of an entry, was supported by at least one member if it is reflected as an option. The options either set out modifications to existing entries, a proposed action (e.g. delete or merge entries) or the addition of new entries (Z1, A1 to D4) which are listed after entries currently listed in Annex I for ease of reference. The expert working group also agreed that the ordering of the entries could be further considered.
4. The present version of the recommendations sets out supporting information or rationales received from the expert working group by 7 December 2022. It should be noted that the present version of the recommendations does not include all supporting information and rationales provided in the past on Annex I (see documents UNEP/CHW/RA_EWG.2/INF/8, UNEP/CHW/RA_EWG.3/INF/7, and UNEP/CHW/RA_EWG.4/INF/14), as well as comments presented in the meetings, which can be found in reports of EWG meetings (see documents UNEP/CHW/RA_EWG.2/8/Rev.1, UNEP/CHW/RA_EWG.3/8, UNEP/CHW/RA_EWG.4/3/Add.2, UNEP/CHW/RA_EWG.4/3/Add.3, UNEP/CHW/RA_EWG.5/3 and UNEP/CHW/RA_EWG.6/4).
5. More information on the fourth, fifth and sixth meetings of the expert working group on the review of the Annexes, including meeting documents, is available at the Basel Convention website.⁴

I. General issues

A. Distinction between waste streams and waste constituents

1. *Review Y1-Y18 entry by entry*

B. Order of listing

0. Status quo
1. Introduce a new numbering system for the constituents

Note: Annex II contains the four codes Y46 to Y49, which should be taken into account when considering new entries in Annex I.

C. Subheadings for Y19-Y45 and any new constituents

0. Status quo
1. List the constituents according to the following subheadings:
 - (a) Metal constituents
 - (b) Other inorganic constituents
 - (c) Organic constituents
 - (d) Inorganic or organic constituents

II. [Draft] [R][r]ecommended options for possible amendments to Annex I

⁴ See <http://www.basel.int/Implementation/LegalMatters/LegalClarity/Meetings/4rdRAEWGmtg/tabid/8522/Default.aspx>, www.basel.int/Implementation/LegalMatters/LegalClarity/Meetings/EWG5onRA/tabid/9288/Default.aspx and <https://www.basel.int/Implementation/LegalMatters/LegalClarity/Meetings/6thRAEWGmtg/tabid/9633/Default.aspx>.

Caption text: CATEGORIES OF WASTES TO BE CONTROLLED

0. Status quo

Subheading for Y1-Y18: WASTE STREAMS

0. Status quo

Entries Y1-Y18

Y1: Clinical wastes from medical care in hospitals, medical centers and clinics

0. Status quo

1. [Clinical] [biomedical] wastes from human and animal health care from activities in hospitals, medical centers, clinics and other establishments

Y2: Wastes from the production and preparation of pharmaceutical products

0. Status quo

Y3: Waste pharmaceuticals, drugs and medicines

0. Status quo

Note: See also the suggestion to include a new Y-entry “Pharmaceutical, including phytopharmaceutical, or veterinary compounds, e.g. cytotoxic and cytostatic drugs”, identified as D1.

Y4: Wastes from the production, formulation and use of biocides and phytopharmaceuticals

0. Status quo

1. Wastes from the production, formulation and use of biocides and phytosanitary products that cannot be classified from a constituent

Note: See also the suggestion to include a new Y-entry “Biocides”, identified as D2.

Y5: Wastes from the manufacture, formulation and use of wood preserving chemicals

1. Wastes from the manufacture, formulation and use of wood preserving chemicals including waste cork and wood treated with such chemicals

Supporting information, rationales and/or relevant scientific and technical considerations:

The OECD Decision on the Control of Transboundary Movements of Wastes Destined for Recovery Operations considers ‘Treated cork and wood wastes’ (AC170) a hazardous waste, see <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0266%20>.

Note: See also the suggestion to include a new Y-entry “Creosotes”, identified as C9.

Y6: Wastes from the production, formulation and use of organic solvents

0. Status quo

Y7: Wastes from heat treatment and tempering operations containing cyanides

0. Status quo

Y8: Waste mineral oils unfit for their originally intended use

0. Status quo

1. *Delete*

Note: See also the proposal to include two new Y-entries “Hydrocarbons” and “Mineral oils” [in the section on waste constituents to address the wastes covered by Y8], identified as C1 and C2.

Y9: Waste oils/water, hydrocarbons/water mixtures, emulsions

0. Status quo

1. *Delete*

Note: See also the proposal to include two new Y-entries “Hydrocarbons” and “Mineral oils” [in the section on waste constituents to address the wastes covered by Y9], identified as C1 and C2.

Y10: Waste substances and articles containing or contaminated with polychlorinated biphenyls (PCBs) and/or polychlorinated terphenyls (PCTs) and/or polybrominated biphenyls (PBBs)

0. Status quo

Notes:

See also the suggestion to include a new Y-entry “Chemicals listed in Annexes A, B or C of the Stockholm Convention, e.g. PCDD/PCDF, PCB etc.”, identified as C10.

See also the suggestion to include a new Y-entry “Polychlorinated biphenyls (PCBs) and/or polychlorinated terphenyls (PCTs) and/or polybrominated biphenyls (PBBs)” [in the section on waste constituents to address the wastes covered by Y10], identified as C13.

Y11: Waste tarry residues arising from refining, distillation and any pyrolytic treatment

0. Status quo

Y12: Waste from production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish

0. Status quo

1. Wastes from production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish and laboratory contrast media, including those that have solvents, heavy metals or biocides

Y13: Waste from production, formulation and use of resins, latex, plasticizers, glues/adhesives

0. Status quo

Y14: Waste chemical substances arising from research and development or teaching activities which are not identified and/or are new and whose effects on man and/or the environment are not known

0. Status quo

1. *Delete*

Y15: Wastes of an explosive nature not subject to other legislation

0. Status quo

1. *Delete*

Note: See also the suggestion to include a new Y-entry “Substances of an explosive character, e.g. azides, chlorates, perchlorates and peroxides”, identified as D4.

Y16: Wastes from production, formulation and use of photographic chemicals and processing materials

0. Status quo

Y17: Wastes resulting from surface treatment of metals and plastics

0. Status quo

Y18: Residues arising from industrial waste disposal operations

0. Status quo

1. Waste [s other than those covered by Y47] arising from disposal operations

Proposal for new waste stream categories

[Z1: Waste electrical and electronic equipment⁵]

Supporting information, rationales and/or relevant scientific and technical considerations:

As was mentioned in General issues A option 1, the constituents of this waste stream are already included in the current constituents (Y19-Y45) or in the suggested new ones.

COP 15 decided to include a new entry Y49 in Annex II: electrical and electronic waste, to include a new entry A1181 in Annex VIII and to delete entry A1180 from Annex VIII, and to delete entries B1110 and B4030 from Annex IX.

Subheading for Y19-Y45: WASTES HAVING AS CONSTITUENTS:

0. Status quo

⁵ See entry A1181

1. WASTES HAVING AS CONSTITUENTS OR CONTAMINATED WITH

Entries Y19-Y45

Y19: Metal carbonyls

0. Status quo

Y20: Beryllium, beryllium compounds

0. Status quo

Y21: Hexavalent chromium compounds

0. Status quo

Y22: Copper compounds

0. Status quo

1. Granulated copper; copper compounds

*Supporting information, rationales and/or relevant scientific and technical considerations:
Not only copper compounds, but also certain forms of metallic copper exhibit ecotoxic properties that could render the waste as hazardous under H12.*

See entry in Annex VI to Regulation (EC) No 1272/2008 (CLP Regulation); see <http://data.europa.eu/eli/reg/2008/1272/2021-10-01>: “granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]” Aquatic Chronic 2. H411.

Relevant supporting assessments by the Risk Assessment Committee (RAC) of the European Chemicals Agency are:

“M-factors for long-term aquatic hazard for the copper substances listed in Commission Regulation (EU) 2016/1179”; see

[951ec919-e038-e9e3-90bb-0ba50c536d87 \(europa.eu\)](https://eur-lex.europa.eu/eli/reg/2016/1179/oj)

(note that Annex VI to the CLP Regulation has been amended by Commission Regulation (EU) 2016/1179) and “Opinion proposing harmonised classification and labelling at EU level of Granulated copper”; see [04.01-ML-014.02] (europa.eu).

Y23: Zinc compounds

0. Status quo

1. Zinc compounds, zinc in metallic dispersible form (metal powder)

*Supporting information, rationales and/or relevant scientific and technical considerations:
Zinc powder and zinc dust are classified as Aquatic Acute 1 and Aquatic Chronic 1 according to GHS criteria. In addition, not stabilised zinc powder is also classified as a Pyrophoric Solid (H250) and as a Water reactive substance (H250).*

Classification can be found in the CLP Regulation under entries 030-001-00-1 and 030-001-01-9. See <http://data.europa.eu/eli/reg/2008/1272/2021-10-01>.

Detailed information on the toxicity to aquatic and terrestrial organisms of zinc metal can be found in the Risk Assessment Report prepared by the Netherlands in the year 2008. See <https://echa.europa.eu/documents/10162/d7248de0-eb5b-4a9b-83b9-042c4fd66998>.

The identification of zinc powder as a reactive substance with pyrophoric properties can be seen for instance in its associated IPCS/INCHEM data sheet prepared by WHO/ILO. See <https://incchem.org/documents/icsc/icsc/eics1205.htm>

Y24: Arsenic; arsenic compounds

0. Status quo

Y25: Selenium; selenium compounds

0. Status quo

Y26: Cadmium; cadmium compounds

0. Status quo

Y27: Antimony; antimony compounds

0. Status quo

Y28: Tellurium; tellurium compounds

0. Status quo

Y29: Mercury; mercury compounds

0. Status quo

Y30: Thallium; thallium compounds

0. Status quo

Y31: Lead, lead compounds

0. Status quo

Y32: Inorganic fluorine compounds excluding calcium fluoride

0. Status quo

Y33: Inorganic cyanides

0. Status quo

Y34: Acidic solutions or acids in solid form

0. Status quo

Y35: Basic solutions or bases in solid form

0. Status quo

Y36: Asbestos (dust and fibres)

0. Status quo

1. Asbestos and [mineral fibers] [asbestos-like substances]

Note: See also the suggestion to include a new Y-entry “Fibers other than asbestos capable of causing lung damage through inhalation”, identified as B3.

Y37: Organic phosphorus compounds

0. Status quo

Y38: Organic cyanides

0. Status quo

Y39: Phenols; phenol compounds including chlorophenols

0. Status quo

1. Merge with Y40: Organic oxygen compounds, e.g. ethers and phenols including chlorophenols other than covered by C10

Supporting information, rationales and/or relevant scientific and technical considerations: Phenol (entry 604-001-00-2) is classified in the CLP Regulation, according to GHS criteria, as Muta. 2, Acute Tox. 3, STOT RE 2, Skin Corr. 1B (H341, H331, H311, H301, H373, H314). Detailed information on the toxicity of phenol can be found in the EU Risk Assessment report on phenol (2006). <https://echa.europa.eu/documents/10162/1ca68f98-878f-4ef6-914a-9f21e9ad2234>.

This is part of a proposal for a reorganization of all persistent organic pollutants, considering current entries Y39, Y40, Y43, Y44 and Y45, as well as new entries C7 and C10. The complete reorganization is shown in the annex to the present appendix.

Note: See also the suggestion to include a new Y-entry “Chemicals listed in Annexes A, B and C of the Stockholm Convention, e.g. PCDD/PCDF, PCB etc.”, identified as C10.

Y40: Ethers

0. Status quo

1. Merge with Y39: Organic oxygen compounds, e.g. ethers and phenols including chlorophenols other than covered by C10

Supporting information, rationales and/or relevant scientific and technical considerations: Ethanediol (ethylene glycol) (entry 603-027-00-1) is classified in the CLP Regulation, according to GHS criteria, as Acute Tox. 4 (H302).

Tert-butyl methyl ether (MTBE) (entry 603-181-00-X) is classified as a Flam. Liq. 2 and Skin Irrit. 2 (H225, H315).

All referred classifications can be found in the CLP Regulation.

Detailed information on the toxicology of glycol ethers can be found in ECETOC Technical Report 95. 2005. See <https://www.ecetoc.org/wp-content/uploads/2014/08/ECETOC-TR-095-Vol-I.pdf>.

This is part of the proposal for a reorganization of all persistent organic pollutants presented in the annex to the present appendix.

Note: See also the suggestion to include a new Y-entry “Chemicals listed in Annexes A, B and C of the Stockholm Convention, e.g. PCDD/PCDF, PCB etc.”, identified as C10.

Y41: Halogenated organic solvents

0. Status quo

Y42: Organic solvents excluding halogenated solvents

0. Status quo

Y43: Any congener of polychlorinated dibenzo-furan

0. Status quo

1. Merge with Y44 and part of Y39 (pentachlorophenol) and Y40 (decaBDE, tetraBDE, pentaBDE, hexaBDE, heptaBDE) as “Chemicals listed in Annexes A, B or C of the Stockholm Convention e.g. PCDD/PCDF, PCB etc”, identified as C10.

Supporting information, rationales and/or relevant scientific and technical considerations:

Grouping all POPs into a single (new) entry providing a dynamic reference to all substances listed in Annexes A, B or C of the Stockholm Convention is the most effective and “future proof” approach.

This is part of the proposal for a reorganization of all persistent organic pollutants presented in the annex to the present appendix.

Y44: Any congener of polychlorinated dibenzo-p-dioxin

0. Status quo

1. Merge with Y43 and part of Y39 (pentachlorophenol) and Y40 (decaBDE, tetraBDE, pentaBDE, hexaBDE, heptaBDE) as “Chemicals listed in Annexes A, B or C of the Stockholm Convention e.g. PCDD/PCDF, PCB etc”, identified as C10.

Supporting information, rationales and/or relevant scientific and technical considerations:

Grouping all POPs into a single (new) entry providing a dynamic reference to all substances listed in Annexes A, B or C of the Stockholm Convention is the most effective and “future proof” approach.

This is part of the proposal for a reorganization of all persistent organic pollutants presented in the annex to the present appendix.

Y45: Organohalogen compounds other than substances referred to in this Annex (e.g. Y39, Y41, Y42, Y43, Y44)

0. Status quo

1. Organohalogen compounds, e.g. brominated or chlorinated flame retardants, chlorofluorocarbons, bromofluorohydrocarbons, other than covered by Y41 and C10

Supporting information, rationales and/or relevant scientific and technical considerations:

Numerous organohalogen compounds have been classified as hazardous according GHS criteria. Examples are 1,2,3-trichloropropane (entry 602-062-00-X) as Carc. 1B, hexafluoropropene (entry 602-061-00-4) as STOT SE 3; tetrabromobisphenol-A (entry 604-074-00-0) as Aquatic Acute 1.

Further classifications can be found in the CLP Regulation.

Chlorofluorocarbons or bromofluorohydrocarbons cause ozone depletion and are banned or severely restricted by the Montreal Protocol. See https://ozone.unep.org/sites/default/files/2019-12/The%20Ozone%20Treaties%20EN%20-%20WEB_final.pdf.

This is part of the proposal for a reorganization of all persistent organic pollutants presented in the annex to the present appendix.

Note: See also the suggestion to include a new Y-entry “Chemicals listed in Annexes A, B and C of the Stockholm Convention, e.g. PCDD/PCDF, PCB etc.”, identified as C10 which merges Y43 and Y44 and part of Y39 (pentachlorophenol) and Y40 (decaBDE, tetraBDE, pentaBDE, hexaBDE, heptaBDE).

Proposals for new waste constituents

[A. Metal constituents

A1 Aluminium in metallic dispersible form (metal powder), aluminium compounds

Supporting information, rationales and/or relevant scientific and technical considerations:
Aluminium powder (pyrophoric) with entry 013-001-00-6 is classified as a Pyrophoric Solid 1 and as Water Reactive Water-react. 2 (H250, H261). Stabilised aluminium powder (013-002-00-1) is classified as a Flammable Solid 1 and Water-reactive. 2 (H228, H261). Anhydrous aluminium chloride (013-003-00-7) is classified as Skin Corr. 1B (H314).

All referred classifications can be found in the CLP Regulation.

Aluminium is a well-known neurotoxicant. Accumulation in the human body has been related to the presence of aluminium in dialysis fluids and the concomitant intake of aluminium-containing drugs. This accumulation has resulted in dialysis encephalopathy that was often fatal.

Neurotoxic effects have been observed in welders with aluminium urine >100 µg/L. Aluminium has been suggested to be one of several factors contributing to Alzheimer’s disease, although this has not been satisfactorily demonstrated. Information quoted from: Handbook on the Toxicology of Metals, 3rd Edition. 2009. Chapter 17 – Aluminum. See

https://www.academia.edu/42363530/Handbook_on_the_Toxicology_of_Metals_3rd_Edition.

A recent review of health effects of aluminium can be found in the opinion by the Scientific Committee on Health, Environmental and Emerging Risks (SCHEER) “Final opinion tolerable intake of aluminium with regards to adapting the migration limits for aluminium in toys”.

https://ec.europa.eu/health/system/files/2018-03/scheer_o_009_0.pdf.

A2 Alkaline or alkaline earth metals: lithium, sodium, potassium, calcium in uncombined form and magnesium in metallic dispersible form (metal powder); inorganic lithium compounds

Supporting information, rationales and/or relevant scientific and technical considerations:
Lithium (entry 003-001-00-4) is classified as Water-react. 1 and Skin Corr. 1B (H260, H314).

A recent assessment of the health effects (reproductive toxicity) of lithium carbonate, lithium chloride and lithium hydroxide was adopted by the European Chemicals Agency in September 2021. See <https://echa.europa.eu/documents/10162/e2a3c38e-85fe-505c-a325-293c70a74da5>.

Sodium (entry 011-001-00-0) sodium is classified in the CLP Regulation as Water-react. 1 and Skin Corr. 1B (H260, H314).

Potassium (entry 019-001-00-2) is classified in the CLP Regulation as Water-react. 1 and Skin Corr. 1B (H260, H314).

Calcium (entry 020-001-00-X) is classified in the CLP Regulation as Water-react. 2 (H261).

Magnesium powder (pyrophoric) (entry 012-001-00-3) is classified in the CLP Regulation as Pyr. Sol. 1 and Water-react. 1 (H250, H260).

Magnesium, powder or turnings (entry 012-002-00-9) is classified in the CLP Regulation as Flam. Sol. 1, Self-heat. 1 and Water-react. 2 (H228, H252, H261).

All referred classifications can be found in the CLP Regulation.

A3 Vanadium compounds

Supporting information, rationales and/or relevant scientific and technical considerations:
Divanadium pentoxide (entry 023-001-00-8) is classified in the CLP Regulation as Muta. 2, Repr 2, Acute Tox. 4, STOT SE 3, STOT RE 1 and Aquatic Chronic 2 (H341, H361d, H332, H302, H335, H372, H411).

All referred classifications can be found in the CLP Regulation.

Further information on the toxicology of Vanadium can be found in the ATSDR Toxicological Profile of Vanadium. September 2012. See <https://www.atsdr.cdc.gov/toxprofiles/tp58.pdf>.

A4 Nickel, nickel compounds

Supporting information, rationales and/or relevant scientific and technical considerations:

Nickel (entry 028-002-00-7) is classified in the CLP Regulation as Carc. 2, STOT RE 1 and Skin Sens. 1 (H351, H372, H317).

Nickel powder; [particle diameter < 1 mm] (entry 028-002-01-4) is classified in the CLP Regulation as Carc. 2, STOT RE 1, Skin Sens. 1 and Aquatic Chronic 3 (H351, H372, H317, H412).

Nickel dioxide (entry 028-004-00-8) is classified in the CLP Regulation as Carc. 1A, STOT RE 1, Skin Sens. 1 and Aquatic Chronic 4 (H350i, H372, H317, H413).

Nickel (II) 9hlegmat (entry 028-006-00-9) is classified in the CLP Regulation as Carc. 1A, Muta. 2, STOT RE 1, Skin Sens. 1, Aquatic Acute 1 and Aquatic Chronic 1 (H350i, H341, H372, H317, H400, H410). Many other nickel compounds are classified as hazardous.

All referred classifications can be found in the CLP Regulation.

Detailed information on the toxicity of nickel and nickel compounds can be found in the EU Risk Assessment Report on Nickel. 2008. See <https://echa.europa.eu/documents/10162/cefd8bc-2952-4c11-885f-342aac769b3>.

A4 ALT Nickel compounds

A5 Cobalt; cobalt compounds

Supporting information, rationales and/or relevant scientific and technical considerations:

Cobalt metal and numerous cobalt compounds are classified as hazardous in the CLP Regulation, following GHS criteria. Some examples of classified substances are provided below: Cobalt (entry 027-001-00-9) is classified as Carc. 1B, Muta. 2, Repr. 1B, Resp. Sens. 1, Skin Sens. 1 and Aquatic Chronic 4

(H350, H341, H360F, H334, H317, H413)

Cobalt oxide (entry 027-002-00-4) is classified as Acute Tox. 4, Skin Sens. 1, Aquatic Acute 1 and Aquatic Chronic 1 (H302, H317, H400, H410).

Cobalt dichloride (entry 027-004-00-5) is classified as Carc. 1B, Muta. 2, Repr. 1B, Acute Tox. 4, Resp. Sens. 1, Skin Sens. 1, Aquatic Acute 1, Aquatic Chronic 1 (H350i, H341, H360F, H302, H334, H317, H400, H410).

All referred classifications can be found in the CLP Regulation.

Further information on the toxicity of cobalt, and the basis for its hazard classification, can be found in the report by the Risk Assessment Committee of the European Chemicals Agency. 2017. See <https://echa.europa.eu/documents/10162/b7316b11-ae65-1dd0-2e64-bb6ad3efbd82>.

A6 Silver compounds

Supporting information, rationales and/or relevant scientific and technical considerations:

Silver nitrate (entry 047-001-00-2) is classified in the CLP Regulation, based on GHS criteria, as Ox. Sol. 2, Skin Corr. 1B, Aquatic Acute 1 and Aquatic Chronic 1 (H272, H314, H400, H410). All referred classifications can be found in the CLP Regulation.

A proposal to classify silver as a hazardous substance has been submitted by Sweden in 2021 to the European Chemicals Agency, under the CLP Regulation. The proposed classification is: Skin Sens. 1, H317; Muta. 2, H341; Repr. 1B, H360FD; Aquatic Acute 1, H400; Aquatic Acute 1, Aquatic Chronic 1, H410.

Further information on the toxicology and physical chemical properties of silver are available in the related dossier: See <https://echa.europa.eu/documents/10162/fcd8f90a-2394-d9fc-ca96-6b9bed3e8fa1>.

A7 Organic tin compounds and tin tetrachloride

Supporting information, rationales and/or relevant scientific and technical considerations:

Numerous organic tin compounds as well as an inorganic tin compound are classified as hazardous substances in the CLP Regulation, according to GHS classification criteria. Some examples include:

Tin tetrachloride (entry 050-001-00-5) is classified as Skin Corr. 1B and Aquatic Chronic 3 (H314, H412).

Trimethyltin compounds (entry 050-005-00-7) are classified as Acute Tox. 1, Acute Tox. 2, Aquatic Acute 1 and Aquatic Chronic 1 (H310, H330, H300, H400, H410).

Tributyltin compounds (050-008-00-3) are classified as Repr. 1B, Acute Tox. 3, Acute Tox. 4, STOT RE 1, Skin Irrit. 2, Eye Irrit. 2, Aquatic Acute 1, Aquatic Chronic 1 (H360FD, H301, H312, H372, H315, H319, H400, H410).

Dibutyltin dichloride (DBTC) (entry 050-022-00-X) is classified as Muta. 2, Repr. 1B, Acute Tox. 2, Acute Tox. 3, Acute Tox. 4, STOT RE 1, Skin Corr. 1B, Aquatic Acute 1, Aquatic Chronic 1 (H341, H360FD, H330, H301, H312, H372, H314, H400, H410).

All referred classifications can be found in the CLP Regulation

Further information on the toxicological profile of tin and tin compounds can be found in ATSDR 2005; see <https://www.atsdr.cdc.gov/toxprofiles/tp55.pdf>,

and in the chapter by Dopp and Rettenmeier in the book *Encyclopedia of Metalloproteins*. See https://www.researchgate.net/publication/277889777_Tin_Toxicity.

A8 Barium; barium compounds, excluding barium sulfate

Supporting information, rationales and/or relevant scientific and technical considerations: Some barium compounds are classified for their acute toxicity in the CLP Regulation, according to GHS criteria. Some examples include:

Barium chloride (entry 056-004-00-8) is classified as Acute Tox. 3 and Acute Tox. 4 (H301, H332).

Barium salts, with the exception of barium sulphate (entry 056-002-00-7) and some other exceptions are classified as Acute Tox. 4 (H332, H302).

All referred classifications can be found in the CLP Regulation.

Further information on the toxicity of barium and barium compounds can be found in the Toxicological Profile for Barium and barium compounds published by ATSDR in toxicological profile for barium and barium compounds, available at <https://www.atsdr.cdc.gov/toxprofiles/tp24.pdf>.

B. Other inorganic constituents

B1 Inorganic isocyanates

Supporting information, rationales and/or relevant scientific and technical considerations:

Potassium cyanate is classified as Acute Tox. 4 (H302) according GHS criteria. Sodium cyanate is classified as Acute Tox. 4 and Aquatic Chronic 3 (H302, H412) according GHS criteria. Classification can be found in the CLP Regulation under entries 615-016-00-9 and 011-006-00-8.

B2 Inorganic sulphides

Supporting information, rationales and/or relevant scientific and technical considerations:

Sodium sulphide is classified as Acute tox. 4, Acute Tox. 3, Skin corr 1 B and Aquatic Acute 1 (H311, H302, H314, H400) according GHS criteria. Sodium polysulphides is classified as Acute Tox. 3, Skin Corr. 1B and Aquatic Acute 1 (H301, H314, H400) according GHS criteria. Classification can be found in the CLP Regulation under entries 016-009-00-8 and 016-010-00-3.

B3 Fibers other than asbestos capable of causing lung damage through inhalation

Supporting information, rationales and/or relevant scientific and technical considerations: Certain man-made vitreous fibres are known to cause lung damage. Further information on the specific fibers and their effects can be found in:

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. WHO IARC. 2002. Vol. 81. See <https://monographs.iarc.who.int/wp-content/uploads/2018/06/mono81.pdf>.

Recommendation from the Scientific Committee on Occupational Exposure Limits for man-made mineral fibres (MMMFF) with no indication for carcinogenicity and not specified elsewhere. SCOEL/SUM/88. March 2012. See

<https://ec.europa.eu/social/BlobServlet?docId=7722&langId=en&>.

Certain refractory ceramic fibres are classified as carcinogens of Cat. 1B in the CLP Regulation (under index number 650-017-00-8. Certain mineral wools are classified as Carc. Cat 2 under entry 650-016-00-2.

Note: see also Y36

C. Organic constituents

C1 Hydrocarbons other than covered by C2 to C4

Supporting information, rationales and/or relevant scientific and technical considerations: See information on toxicity of hydrocarbons at: <https://www.concawe.eu/wp-content/uploads/Hazard-classification-and-labelling-of-petroleum-substances-in-the-European-Economic-Area-%E2%80%93-2020.pdf>.

C2 Mineral oils

Supporting information, rationales and/or relevant scientific and technical considerations: In principle covered by C1 but a specific code for mineral oils would be acceptable.

C3 Aromatic compounds other than covered by C4

Supporting information, rationales and/or relevant scientific and technical considerations: Benzene, toluene ethylbenzene and xylene (BTEX) are a group of related volatile organic compounds and often applied in practical waste analysis. They are classified as hazardous according GHS criteria. Classification of benzene (entry 601-020-00-8) as Flam. Liq. 2, Carc. 1, Muta. 1B, STOT RE 1, Asp. Tox. Eye Irrit. 2 and Skin Irrit 2 (H225, H350, H340, H372, H304, H319 and H315); toluene (entry 601-021-00-3) as Flam. Liq. 2, Repr. 2, Asp. Tox. 1, STOT RE 2, Skin Irrit. 2 and STOT SE 3 (H225, H361, H304, H373, H315, H336); ethylbenzene (entry 601-023-00-4) as Flam. Liq. 2, Acute Tox. 4, STOT RE 2 and Asp. Tox. (H225, H332, H373, H304) or xylene (entry 601-022-00-9) as Flam. Liq. 3, Acute Tox. 4, Acute Tox. 4 Skin Irrit. 2 (H226, H332, H312, H315) and further aromatic compounds can be found in the CLP Regulation.

Further information can also be found in <https://www.atsdr.cdc.gov/interactionprofiles/ip-btex/ip05.pdf> and

https://publications.iarc.fr/_publications/media/download/6043/20a78ade14e86cf076c3981a9a094f45da6d27cc.pdf.

C4 Polycyclic aromatic hydrocarbons

Supporting information, rationales and/or relevant scientific and technical considerations: Numerous PAHs are classified as hazardous substances due to their carcinogenicity, mutagenicity or toxicity for reproduction, as well as due to their ecotoxicity. Detailed information on assigned classifications can be found in the CLP Regulation, for example: naphthalene (entry 601-052-00-2) as Carc. 2, benzo[a]pyrene (entry 601-032-00-3) as carc. 1B. Polycyclic aromatic compounds are often used as a sum parameters in waste classification.

Further detailed information on the toxicity of PAHs can be found in:

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Vol.92. October 2005. Some Non-heterocyclic Polycyclic Aromatic Hydrocarbons and Some Related Exposures. See <http://publications.iarc.fr/110>.

C5 Organic nitrogen compounds, e.g. aliphatic or aromatic amines

Supporting information, rationales and/or relevant scientific and technical considerations: Some examples of the classification of relevant amines include: Trimethylamine (entry 612-001-00-9) as Flam. Gas 1, Acute Tox 4, STOT SE 3, Skin Irrit 2, Eye Dam. 1 (H220, H332, H335, H315, H318).

Nitrobenzene (entry 609-003-00-7) as Carc. 2, Repr. 1B, Acute Tox. 3, Acute Tox. 3, Acute Tox. 3, STOT RE 1 and Aquatic Chronic 3 (H351, H360, H301, H331, H311, H372, H412); Aniline (entry 612-008-00-7) as Carc. 2, Muta 2, Acute Tox. 3, Acute Tox. 3, Acute Tox. 3, STOT RE 1, Eye Dam. 1, Skin Sens 1, Aquatic Acute 1 (H351, H341, H331, H311, H301, H372, H318, H317, H400).

Further classifications can be found in the CLP Regulation.

Further detailed information can be found in:

IARC Monograph Vol. 127. (2021) Some Aromatic Amines and Related Compounds. See <https://publications.iarc.fr/599>

IARC Monograph Vol. 123. (2020) Some Nitrobenzenes and Other Industrial Chemicals. See <http://publications.iarc.fr/584>

IARC Monographs Vol. 122. (2019) Isobutyl nitrite, β -picoline, and some acrylates.

https://publications.iarc.fr/_publications/media/download/5994/f020f11a6da11e6966cb8eacff492542d7f64935.pdf.

C6 Organosulfur compounds

Supporting information, rationales and/or relevant scientific and technical considerations: Numerous organosulfur compounds are classified as hazardous according to GHS criteria. Some relevant examples are Dimethyl sulphate (entry 016-023-00-4) as Carc. 1B, Muta 2, Acute Tox. 2, Acute Tox. 3, Skin. Corr. 1B, Skin. Sens (H350, H341, H330, H301, H314, H317); ethanethiol (entry 016-022-00-9) as Flam. Liq 2, Acute Tox. 4 Aquatic Acute and Aquatic Chronic 1 (H225, H332, H400, H410) and bis(methoxythiocarbonyl) disulphide (entry 016-024-00-X) as Acute Tox. 4, Aquatic Acute 1, Aquatic Chronic 1 (H301, H400, H401). Further classifications can be found in the CLP Regulation.

C7 Organic oxygen compounds, e.g. ethers and phenols including chlorophenols other than covered by C10

Supporting information, rationales and/or relevant scientific and technical considerations: Numerous organic oxygen compounds are classified as hazardous according to GHS criteria.

Some relevant examples are methanol (entry 603-001-00-X) as Flam. Liq. 2, Acute Tox. 3, Acute Tox. 3, Acute Tox. 3 STOT SE 1 (H225, H331, H311, H301, H370); tert-butyl methyl ether (entry 603-181-00-X) as Flam. Liq. 2, Skin Irrit 2 (H225, H315); 2-chlorophenol (entry 604-008-00-0) as Acute Tox. 4, Acute Tox. 4 Acute Tox 4, Aquatic Chronic 2 (H332, H312, H302, H411); 2,4-dichlorophenol (entry 604-011-00-7) as Acute Tox. 4, Eye Irrit. 2, Skin cor. 1B, Aquatic Chronic 2 (H311, H302, H314, H411) or bisphenol A (entry 604-030-00-0) as Repr. 1B, STOT SE 3, Eye Dam. 1, Skin Sens. 1 (H360, H335, H318, H317).

Further classifications organic oxygen compounds can be found in the CLP Regulation.

Further detailed information can also be found in:

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans Vol 36. 1985. Allyl Compounds, Aldehydes, Epoxides and Peroxides. See

https://publications.iarc.fr/_publications/media/download/1584/3ef54f58ce19b8cb94da1d31bc8ead4eb6679a2a.pdf.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Vol 77. 2000. Some Industrial Chemicals. See

https://publications.iarc.fr/_publications/media/download/2519/d3673e35a0c40e4a03f2b642b6a5d50d59cac040.pdf.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Vol 117. 2019.

Pentachlorophenol and Some Related Compounds. See

https://publications.iarc.fr/_publications/media/download/5717/3507e6ef7631cd3e073e5cb65415daa0b524989c.pdf.

This is part of the proposal for a reorganization of all persistent organic pollutants presented in the annex to the present appendix.

Note: C7 is identical with Y39 option 1 and Y40 option 1

C8 Organic isocyanates, e.g. methyl isocyanate

Supporting information, rationales and/or relevant scientific and technical considerations: Methyl isocyanate (entry 615-001-00-7) is classified as Flam. Liq. 2, Repr. 2, Acute Tox. 2, Acute Tox. 3, Acute Tox. 3. Resp. Sens. 1, Skin Sens. 1, STOT SE 3, Skin Irrit. 2, Eye Dam. 1 (H225, H361, H330, H311, H301, H334, H317, H335, H315, H318) according to GHS categories.

Toluene-2,4-di-isocyanate (entry 615-001-00-4) is classified as Carc. 2, Acute Tox. 2, Eye Irrit. 2, STOT SE 3, Skin Irrit. 2, Resp. Sens. 1, Skin Sens. 1, Aquatic Chronic 3 (H351, H330, H319, H335, H315, H334, H317, H412) according to GHS criteria.

Classification of methyl isocyanate, toluene-2,4-di-isocyanate and further isocyanate can be found in the CLP Regulation.

C9 Creosotes

Supporting information, rationales and/or relevant scientific and technical considerations: Creosotes are mixtures of substances and are produced by distillation of tars from fossil fuels or the pyrolysis of plant material, e.g. wood. The distillate of coal tar produced by high temperatures is classified as Carc 1 B (H350) according to GHS criteria. Classification can be found in the CLP Regulation under entry 648-101-00-4.

C10 Chemicals listed in Annexes A, B or C of the Stockholm Convention, e.g. PCDD/PCDF, PCB etc.

Supporting information, rationales and/or relevant scientific and technical considerations: Grouping all POPs into a single (new) entry providing a dynamic reference to all substances listed in Annexes A, B or C of the Stockholm Convention is the most effective and "future proof" approach.

Note: C10 includes Y43 and Y44 and part of Y39 (pentachlorophenol) and Y40 (decaBDE, tetraBDE, pentaBDE, hexaBDE, heptaBDE).

Supporting information, rationales and/or relevant scientific and technical considerations: Grouping all POPs into a single (new) entry providing a dynamic reference to all substances listed in Annexes A, B or C of the Stockholm Convention is the most effective and "future proof" approach.

This is part of the proposal for a reorganization of all persistent organic pollutants presented in the annex to the present appendix.]

C11 Perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride

Supporting information, rationales and/or relevant scientific and technical considerations: Listed as a POP substance in Annex A of the Stockholm Convention, this entry should be covered by the group entry C10.

C12 Short-chain chlorinated paraffins

Supporting information, rationales and/or relevant scientific and technical considerations: Listed as a POP substance in Annex A of the Stockholm Convention, this entry should be covered by the group entry C10.

C13 Polychlorinated biphenyls (PCBs) and/or polychlorinated terphenyls (PCTs) and/or polybrominated biphenyls (PBBs)

Supporting information, rationales and/or relevant scientific and technical considerations: PCBs and HBB are listed as POP substances in Annex A of the Stockholm Convention. This entry should on the one hand be covered by the group entry C10 (PCBs and HBB), and on the other hand by group entry Y45 "organohalogen compounds" covering PCTs and PBBs other than HBB.

Further information on the toxicity of PBBs can be found in:

EFSA Panel on Contaminants in the Food Chain (CONTAM); Scientific Opinion on Polybrominated Biphenyls (PBBs) in Food. EFSA Journal 2010 ; 8(10) :1789.

<https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2010.1789>.

ATSDR, 2004. Toxicological profile for polybrominated biphenyls and polybrominated diphenyl ethers. <https://www.atsdr.cdc.gov/toxprofiles/tp68.pdf>.

WHO, 1994. International Programme on Chemical Safety (IPCS). Environmental Health Criteria 152. Polybrominated biphenyls.

<https://apps.who.int/iris/bitstream/handle/10665/39263/9241571527-eng.pdf?sequence=1>.

Exhaustive information on the toxicity of PCBs and of PCTs can be found in:

World Health Organization & International Programme on Chemical Safety, 1993.

Polychlorinated biphenyls and terphenyls, 2nd. Ed. World Health Organization. See

<https://apps.who.int/iris/bitstream/handle/10665/38678/9241571403-eng.pdf?sequence=1&isAllowed=y>.

C14 Organosilicon compounds

Supporting information, rationales and/or relevant scientific and technical considerations: Organosilicon compounds contain carbon-silicon bounds. These compounds are widely used in commercial products. Most common are sealants, caulks or adhesives.

Classification of Octamethylcyclotetrasiloxane as Repr. 2, Aquatic Chronic 4 (H361, H413) according to GHS criteria can be found in the CLP Regulation under entry 014-018-00-1.

D. Organic or inorganic constituents

D1 Pharmaceutical, including phytopharmaceutical, or veterinary compounds, e.g. cytotoxic and cytostatic drugs

D2 Biocides

D3 Materials containing pathogens

D4 Azides, chlorates, perchlorates and peroxides

[D5 Organic peroxides]

Supporting information, rationales and/or relevant scientific and technical considerations for D1 to D4: Lead azide [$\geq 20\%$ phlegmatiser] is classified as Exp. 1.1, Repr 1A, Acute Tox. 4, STOT RE 2, Aquatic Acute 1, Aquatic Chronic 1 (H201, H360, H332, H302, H373, H400, H410) according GHS criteria (entry 082-003-01-4). Ammonium perchlorate is classified as Expl. 1.1, Ox. Sol. 1 (H201, H271) according GHS criteria (entry 017-009-00-0). These and further entries can be found in the CLP Regulation.

Supporting information, rationales and/or relevant scientific and technical considerations for D5: link to the possible deletion of hazardous characteristic H5.2 Organic peroxides which is about constituents.]

Paragraphs (a) to (d) at the end of Annex I

0. Status quo

Annex to Appendix I: Proposal for a reorganization of entries of all Persistent Organic Pollutants in Annex I to the Convention

ENTRIES FOR PERSISTENT ORGANIC POLLUTANTS			
	Current entries		New entries proposed by EU+MS
Y39	Phenols, phenol compounds including chlorophenols	C7+C10	
Y40	Ethers	C7+C10	
Y43	Any congener of polychlorinated dibenzo-furan	C10	
Y44	Any congener of polychlorinated dibenzo-p-dioxin	C10	
Y45	Organohalogen compounds other than substances referred to in this Annex (e.g. Y39, Y41, Y42, Y43, Y44)	Y45	Organohalogen compounds, e.g. brominated or chlorinated flame retardants, chlorofluorocarbons, bromofluorohydrocarbons, other than the chemicals referred to in C10
	New entries presented in the Report of the fourth meeting of the Expert Working Group on the review of Annexes (supplementary sessions, 11-15 October 2021)		
C7	Organic oxygen compounds, e.g. ethers and phenols including chlorophenols other than covered by C10	C7	Organic oxygen compounds, e.g. ethers and phenols including chlorophenols other than covered by C10
C10	Chemicals listed in Annexes A, B or C of the Stockholm Convention, e.g. PCDD/PCDF, PCB etc.	C10	Chemicals listed in Annexes A, B or C of the Stockholm Convention, e.g. PCDD/PCDF, PCB etc.
C11	Perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride	C10	
C12	Short-chain chlorinated paraffins	C10	
C13	Polychlorinated biphenyls (PCBs) and/or polychlorinated terphenyls (PCTs) and/or polybrominated biphenyls (PBBs)	C10 and Y45	

Appendix II to the [draft] recommendations by the expert working group pertaining to Annex I to the Convention

Whether any additional constituents in relation to plastic waste should be added to Annex I to the Convention

The following constituents seem relevant in relation to plastic wastes:

- a) From the current constituents: [Y23], Y24, Y26, Y27, [Y29], Y31 and Y45;
- b) From the proposals for new constituents: C4, C7 (which covers Y39 and Y40, including e.g. phthalates and bisphenol A, except pentachlorophenol and decaBDE, tetraBDE, pentaBDE, hexaBDE, heptaBDE) and C10 (which includes Y43 and Y44 and part of Y39 (pentachlorophenol) and Y40 (decaBDE, tetraBDE, pentaBDE, hexaBDE, heptaBDE)). [C11, C12 and C13]

[Draft r] [R]ecommendations by the expert working group on the review of Annexes for possible amendment proposals to Annex III, including whether any additional characteristics in relation to plastic waste should be added to Annex III, and findings of the expert working group on the consequential implications of the review of Annex III to the Convention (status 2 December 2023)

I. Possible amendment proposals to Annex III of the Basel Convention

1. The expert working group on the review of Annexes recommends that possible amendment proposals to Annex III should be based on one or more of the objectives of the review of the annex, as set out in the annex to decision BC-13/2, which are to:

- (a) Improve/update the list of hazardous characteristics in Annex III;
 - (b) Improve environmental controls by including any additional hazardous characteristics in Annex III that occur in practice; and
 - (c) Clarify the descriptions in Annex III to address conflicts or overlaps.
2. Members of the expert working group expressed different views as to whether:
- (a) The description of the hazardous characteristics should refer to substances within the wastes and/or to the wastes;
 - (b) The list of hazardous characteristics should be organized considering the different types of hazards involved (e.g. physical, chemical, environmental and delayed hazards);
 - (c) An introduction should be added to Annex III;
 - (d) Hazardous characteristics, and which ones, should be added, of those described in the Globally Harmonized System of Classification and Labelling of Chemicals (GHS);
 - (e) *De minimis* concentration values, concentration limit values or cut off concentration values should be established in order to allow an objective determination of hazardousness and, if so, which thresholds and methodology should be used;
 - (f) The threshold values to discriminate between hazardous and non-hazardous waste should define non-hazardous waste which is effectively harmless in worst-case mis-management situations or, to the contrary, results in waste still subject to sound environmental management, but not requiring control under the Convention.
3. Members of the expert working group also expressed different views on the extent to which to balance the benefits of proposed changes to Annex III with the resources required and risks involved when giving effect to them (e.g. the need to amend national legislation/regulations and for Competent Authorities and other stakeholders involved in transboundary movements to adjust their operations)¹.

4. The expert working group on the review of Annexes also recommends that further work on the review of Annex III be based on the general issues and the recommended options for possible amendment proposals to Annex III set out in appendix I to the present [draft] recommendations.

¹ See the “General issues” listed in Appendix I to the [draft] recommendations by the expert working group, paragraphs 12–15 and 20–24 of the 11–15 October 2021 sessions of the fourth meeting of the EWG.

II. Whether any additional characteristics in relation to plastic waste should be added to Annex III to the Convention

5. The expert working group on the review of Annexes also recommends that further work on whether any additional characteristics in relation to plastic waste should be added to Annex III be based on the text set out in appendix II to the present [draft] recommendations².

III. Findings of the expert working group on the consequential implications of the review of Annex III to the Convention

[...]³

Appendix I to the [draft] recommendations by the expert working group pertaining to Annex III to the Convention

1. The following are [draft] recommended options prepared by the expert working group on the review of the Annexes during its fourth meeting (online on 17–21 May 2021, and 11–15 October 2021), fifth meeting (Geneva, 5-7 December 2022) and part I of its sixth meeting (Geneva, 28 November-1 December 2023) for possible amendments to Annex III.
2. The expert working group discussed general issues and a general introduction, and reviewed each entry and text set out in Annex III. The [draft] recommended options do not necessarily reflect the views of all the members.
3. Each option was supported by at least one member of the expert working group. The status quo, namely the current drafting of an entry or text, was supported by at least one member if it is reflected as an option; when the status quo is not reflected as an option, it is because no member supported it⁴. The options either set out modifications to existing entries, a proposed action (e.g. delete or merge entries) or the addition of new entries (1 to 13) and new text which are listed after entries currently listed in Annex III for ease of reference. The expert working group also agreed that the ordering of the entries could be further considered.
4. For some options, supporting information was provided by proponents, such as alignment with the UN Recommendations on Transport of Dangerous Goods – Model Regulations (UN Model Regulations) and with the GHS. In this regard, it should be noted that there may be differences in the way the UN Model Regulations and the GHS are implemented at the national level.⁵
5. The present version of the recommendations sets out supporting information or rationales received from the expert working group by 1 December 2023. It should be noted that the present version of the recommendations does not include all supporting information and rationales provided in the past on Annex III (see documents UNEP/CHW/RA_EWG.2/INF/8, UNEP/CHW/RA_EWG.3/INF/7, UNEP/CHW/RA_EWG.4/INF/14 and UNEP/CHW/RA_EWG.4/INF/20), as well as comments presented in the meetings, which can be found in reports of EWG meetings (see documents UNEP/CHW/RA_EWG.2/8/Rev.1, UNEP/CHW/RA_EWG.3/8, UNEP/CHW/RA_EWG.4/3/Add.2, UNEP/CHW/RA_EWG.4/3/Add.3, UNEP/CHW/RA_EWG.5/3 and UNEP/CHW/RA_EWG.6/4).
6. More information on the fourth, fifth and sixth meetings of the expert working group on the review of the Annexes, including meeting documents, is available at the Basel Convention website.⁶

² See paragraphs 68–69 of the 11–15 October 2021 sessions of the fourth meeting of the EWG, and paragraphs 119 - 121 of the report of the fifth meeting of the EWG.

³ See paragraph 70 of the 11–15 October 2021 sessions of the fourth meeting of the EWG.

⁴ The only characteristic for which the status quo is retained is: H13 Capable, by any means after disposal, or yielding another material, e.g., leachate, which possesses any of the characteristics listed above.

⁵ The text of these two sentences was finalized by email subsequently to the suspension of the meeting (see paragraph 18 of the report of the 11-15 October 2021 sessions of the fourth meeting of the EWG (UNEP/CHW/RA_EWG.4/3/Add.3)).

⁶ See

<http://www.basel.int/Implementation/LegalMatters/LegalClarity/Meetings/4rdRAEWGmtg/tabid/8522/Default.aspx>, www.basel.int/Implementation/LegalMatters/LegalClarity/Meetings/EWG5onRA/tabid/9288/Default.aspx and <https://www.basel.int/Implementation/LegalMatters/LegalClarity/Meetings/6thRAEWGmtg/tabid/9633/Default.aspx>.

I. General issues

A. Reference to UN class

0. Status quo
Supporting information, rationales and/or relevant scientific and technical considerations: UN Model Regulations provide a key way to identify and communicate the hazards posed by the transboundary movement of dangerous goods, specifically when referring to physical hazards (e.g. explosive, corrosive, flammable).

B. Alignment with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)⁷

1. Incorporate relevant environmental, human health and delayed hazard characteristics of the GHS

C. Alignment with UN Recommendations on Transport of Dangerous Goods – Model Regulations (UN Model Regulations)⁸

1. Incorporate relevant elements of UN Model Regulations to review the physical hazardous characteristics, review the text on tests and inform the addition of new text on the precedence of hazardous characteristics
2. Incorporate elements of UN Model Regulations to review as relevant hazardous characteristics for aspects not covered under the GHS

D. Terminology

0. Status quo: reference to “substances or wastes”
 1. Retain only reference to “wastes”
Supporting information, rationales and/or relevant scientific and technical considerations: alignment with articles 1.1(a) and 2.1 of BC
 2. Retain reference to “substances”
Supporting information, rationales and/or relevant scientific and technical considerations: Alignment with UN Model Regulations
 3. Insert reference to “substances and/or mixture”

E. Structure of hazardous characteristics in Annex III

0. Status quo
1. List the hazardous characteristics according to:
 - Physical hazardous characteristics
 - Human health hazardous characteristics
 - Environmental hazardous characteristics
 - Delayed hazardous characteristics

F. Introduction of an introductory text and paragraph on tests

1. No introductory text
2. Introduce text on methods to determine if a waste displays hazard characteristics, notably calculation methods and testing methods, how these methods relate to each other and a specific derogation from these methods for waste containing certain POPs

II. [Draft] [r][R]ecommended options for possible amendments to Annex III

A. Caption text: LIST OF HAZARDOUS CHARACTERISTICS

0. Status quo

⁷ Globally Harmonized System of Classification and Labelling of Chemicals (GHS Rev. 9, 2021). available at: <https://unece.org/transport/standards/transport/dangerous-goods/ghs-rev9-2021>.

⁸ Recommendations on the Transport of Dangerous Goods Model Regulations – 22nd Revised Edition (Vol. I & II), available at: <https://unece.org/transport/dangerous-goods/un-model-regulations-rev-22>.

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1. “HAZARDOUS CHARACTERISTICS” with the following subheading: “List of [hazard] [hazardous] characteristics”, after the general introduction.

B. Footnote 14 for UN Class: Corresponds to the hazard classification system included in the United Nations Recommendations on the Transport of Dangerous Goods (ST/SG/AC.10/1/Rev.5, United Nations, New York, 1988)

1. Keep footnote 14 and update the reference

Supporting information, rationales and/or relevant scientific and technical considerations: keep the reference to the UN Model Regulations

C. General Introduction

0. Status quo

1. When assessing the hazard characteristics of waste, the criteria laid down in this Annex shall apply. To determine if a waste [that belongs to any category contained in Annex I] displays hazard characteristics, the following methods can be applied:

- Calculation methods to assess the characteristics for which thresholds and related calculation criteria based on the concentration, hazard class, category code(s), and hazard statement code(s)⁹ of the constituents as set out in Annex I present in the waste are given. Hazard classes, categories and hazard statements refer to those defined in GHS and refer to concentration thresholds, defined for such constituents to which said hazard statements can be assigned. These characteristics are: [...]

These calculation methods and associated concentration limits do not apply to pure metal alloys in their massive form (not contaminated with hazardous constituents).

- Testing methods to determine whether the waste displays hazard characteristics.

Where a hazard characteristic of a waste has been assessed by a test and by using the concentrations of a hazardous constituent as indicated in this Annex, the result of the test shall prevail.

For [...], cut-off values for individual constituents as indicated in this Annex shall apply to the assessment. Where a constituent is present in the waste below its cut-off value, it should not be included in any calculation for comparison with a threshold.

Standardized tests have been derived with respect to pure substances and materials. In many countries, national tests have been developed which can be applied to categories of wastes listed in Annex I, in order to decide if these wastes exhibit any of the characteristics listed in this Annex. In addition, available relevant internationally recognized test methods and guidelines could be used, inter alia the OECD guidelines for the testing of chemicals,¹⁰ ISO guidelines, and in any relevant standards as referred to in this Annex. The use of certain tests for waste may not be possible or advisable due to technical or practical limitations or due to animal welfare considerations.

[By way of derogation from the calculation and testing referred to above, wastes containing [aldrin, alpha-HCH, beta-HCH and lindane, chlordane, chlordecone, DDT, dieldrin, endrin, hexabromobiphenyl, hexachlorobenzene, heptachlor, mirex, PCB, PCDDs/PCDFs, pentachlorobenzene and/or toxaphene] [POPs listed under the Stockholm Convention] exceeding the low POP contents indicated in the “General technical guidelines on the environmentally sound management of wastes consisting of, containing or contaminated with persistent organic pollutants developed under the Basel Convention” shall be classified as hazardous.]

D. Current entries and text in Annex III

H1 Explosive

An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) which is in itself capable by chemical reaction of producing gas at such temperature and pressure and at such a speed as to cause damage to the surroundings

Related GHS definitions:*

⁹ See http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html.

¹⁰ <http://www.oecd.org/env/ehs/testing/oecdguidelinesforthetestingofchemicals.htm>.

Explosive substance or mixture: An explosive substance or mixture is a solid or liquid substance or mixture which is in itself capable by chemical reaction of producing gas at such temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances and mixtures are included even when they do not evolve gases.

Pyrotechnic substance or mixture: A pyrotechnic substance or mixture is a substance or mixture designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative self-sustaining exothermic chemical reactions.

**Globally Harmonized System of Classification and Labelling of Chemicals (GHS Rev. 9, 2021)*

1. Merge with part of H5.2

H1 Explosive

Waste which is capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic waste, explosive organic peroxide waste and explosive self-reactive waste is included. When a waste contains one or more substances classified by one of the hazard class and category codes and hazard statement codes shown in Table 1 the waste shall be assessed for H[1], where appropriate and proportionate, according to test methods. If the presence of a substance, a mixture or an article indicates that the waste is explosive, it shall be classified as hazardous by H[1].

Table 1 to be updated as indicated below, in order to take account of changes to this hazardous characteristic, introduced in revision 9 of GHS. Changes made with respect to the current version are **in bold**, deletions are in strikethrough Hazard statement Code(s) for waste constituents for the classification of wastes as hazardous by H[1]

Hazard Class and Category Code(s)	Hazard statement Codes(s)	Hazard Class and Category Code(s)	Hazard statement Codes(s)	Hazard Class and Category Code(s)	Hazard statement Codes(s)
Unstable explosives	H209, H210, H211	Explosive 1.3	H209	Organic peroxide A	H240
Explosive 1.1	H209	Explosive 1.4	H204	Self-reactive B	H241
Explosive 1.2	H209	Self-reactive A	H240	Organic peroxide B	H242
[Explosive 1.5]	[H205]	[Explosive 1.6]			

Supporting information, rationales and/or relevant scientific and technical considerations: Include links to GHS codes. The inclusion of explosive organic peroxides here results from the fact that these substances meet the requirements to be classified as explosive. An “organic peroxide” is not a property, it is the name given to a family of chemical compounds.

Sub-division 1.5 and 1.6 are not included as they cover very insensitive and extremely insensitive substances and mixtures and as such are not relevant for the classification of waste. Hazard statement H205, previously assigned to Explosives in sub-division 1.5 has been deleted in GHS revision 9.

2. H1 Explosive

An explosive substance is a solid or liquid substance (or mixture of substances) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances are included even when they do not evolve gases.

Supporting information, rationales and/or relevant scientific and technical considerations: Alignment with UN Model Regulations

H3 Flammable liquids

The word “flammable” has the same meaning as “inflammable”. Flammable liquids are liquids or mixtures of liquids or liquids containing solids in solutions or suspension (for example, paints, varnishes, lacquers, etc., but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not more than 60.5°C, closed-cup test, or not more than 65.6°C, open-cup test. (Since the results of open-cup tests and of closed-cup tests are not strictly comparable

and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such differences would be within the spirit of this definition.)

Related GHS definition:

Flammable liquid: A flammable liquid means a liquid having a flash point of not more than 93°C.

1. H3 Flammable liquids

Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc., but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not more than 60°C, closed-cup test, or not more than 65.6°C, open-cup test. (Since the results of open-cup tests and of closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such differences would be within the spirit of this definition.) Liquids with a flash point of more than 35 °C which do not sustain combustion need not be considered as flammable liquids. Liquid desensitized explosives are explosive substances which are dissolved or suspended in water or other liquid substances, to form an homogeneous liquid mixture to suppress their explosive properties

Supporting information, rationales and/or relevant scientific and technical considerations: Alignment with UN Model Regulations and include flammable liquids and liquid desensitized explosives. The word “flammable” has the same meaning as “inflammable”.

H4.1 Flammable solids

Solids, or waste solids, other than those classed as explosives, which under conditions encountered in transport are readily combustible, or may cause or contribute to fire through friction

Related GHS definitions:

Flammable solid: A flammable solid is a solid which is readily combustible or may cause or contribute to fire through friction.

Readily combustible solids: Readily combustible solids are powdered, granular, or pasty substances which are dangerous if they can be easily ignited by brief contact with an ignition source, such as a burning match, and if the flame spreads rapidly.

1. H4.1 Flammable solids

Solids, which, under conditions encountered in transport, are readily combustible, or may cause or contribute to fire through friction, self-reactive substances and polymerizing substances which are liable to undergo a strongly exothermic reaction; or solid desensitized explosives which may explode if not diluted sufficiently.

Flammable Solids are readily combustible solids and solids which may cause fire through friction. Readily combustible solids are powdered, granular, or pasty substances which are dangerous if they can be easily ignited by brief contact with an ignition source, and if the flame spreads rapidly.

Self-reactive substances are thermally unstable substances liable to undergo a strongly exothermic decomposition even without participation of oxygen.

Polymerizing substances are substances which, without stabilization, are liable to undergo a strongly exothermic reaction resulting in the formation of larger molecules or resulting in the formation of polymers under conditions normally encountered in transport.

Solid desensitized explosives are explosive substances which are wetted with water or alcohols or are diluted with other substances, to form a homogeneous solid mixture to suppress their explosive properties

*Supporting information, rationales and/or relevant scientific and technical considerations:
Alignment with the UN Model Regulations to add definition and two substances and one
type of solid*

H4.2 Substances or wastes liable to spontaneous combustion

Substances or wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.

Related GHS definitions:

Self-heating substance: *A self-heating substance or mixture is a solid or liquid substance or mixture other than a pyrophoric liquid or solid, which, by reaction with air and without energy supply, is liable to self-heat; this substance or mixture differs from a pyrophoric liquid or solid in that it will ignite only when in large amounts (kilograms) and after long periods of time (hours or days).*

Pyrophoric liquid: *A pyrophoric liquid is a liquid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air.*

Pyrophoric solid: *A pyrophoric solid is a solid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air.*

Self-reactive substances or mixtures: *Self-reactive substances or mixtures are thermally unstable liquid or solid substances or mixtures liable to undergo a strongly exothermic decomposition even without participation of oxygen (air). This definition excludes substances and mixtures classified under the GHS as explosives, organic peroxides or as oxidizing.*

1. H4.2 Substances liable to spontaneous combustion

Includes pyrophoric substances and self-heating substances.

Pyrophoric substances are substances, including mixtures and solutions, which even in small quantities ignite within five minutes of coming in contact with air.

Self-heating substances are substances, other than pyrophoric substances, which in contact with air without energy supply are liable to self-heating. These substances will ignite only when in large amounts (kilograms) and after long periods of time (hours or days).

*Supporting information, rationales and/or relevant scientific and technical considerations:
Alignment with the UN Model Regulations and clarification that pyrophoric substances and
self-heating substances are covered under H4.2*

H4.3 Substances or wastes which, in contact with water emit flammable gases

Substances or wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities

Related GHS definition:

Substances or mixtures which, in contact with water emit flammable gases: *Substances or mixtures which, in contact with water, emit flammable gases are solid or liquid substances or mixtures which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.*

2. H4.3 Substances which in contact with water emit flammable gases

Substances which emit a flammable gas at a rate greater than 1 L/kg of substance per hour or spontaneously ignite at any step in the procedure described in section 2.4.4.2 of Chapter 2.4 of the *United Nations Recommendations on the Transport of Dangerous Goods*, or a comparable evidence recognized by a national competent authority.

*Supporting information, rationales and/or relevant scientific and technical considerations:
Alignment with the UN Model Regulations*

H5.1 Oxidizing

Substances or wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion of other materials.

Related GHS definitions:

Oxidizing liquids: *An oxidizing liquid is a liquid which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material.*

Oxidizing solids: *An oxidizing solid is a solid which, while in itself is not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material.*

1. Merge with part of H5.2

H5.1 Oxidizing

Wastes which, may, generally by providing oxygen, cause or contribute to the combustion of other materials. When a waste contains one or more substances classified by one of the hazard class and category codes and hazard statement codes shown in Table 2, the waste shall be assessed for H[5], where appropriate and proportionate, according to test methods. If the presence of a substance indicates that the waste is oxidizing, it shall be classified as hazardous by H[5].

Table 2: Hazard Class and Category and Hazard statement Code(s) for the classification of wastes as hazardous by H[5]

Hazard Class Category Code(s)	Hazard statement Code(s)
Oxidizing Gases 1	H270
Oxidizing Liquid 1	H271
Oxidizing Solid 1	H271
Oxidizing Liquid 2	H272
Oxidizing Solid 2	H272
Oxidizing Liquid 3	H272
Oxidizing Solid 3	H272

Supporting information, rationales and/or relevant scientific and technical considerations: Ensure compatibility and clear links with GHS classification and covers part of H5.2 because many organic peroxides are oxidizing.

Includes waste containing organic peroxides to which the relevant hazard statements are assigned under GHS. An "organic peroxide" does not describe a specific hazard property, but a name given to a family of chemical compounds.

3. H5.1 Oxidizing

Substances which, while in themselves not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other materials

H5.2 Organic Peroxides

Organic substances or wastes which contain the bivalent-o-o-structure are thermally unstable substances which may undergo exothermic self-accelerating decomposition.

Related GHS definition:

Organic peroxides: *Organic peroxides are liquid or solid organic substances which contain the bivalent -O-O- structure and may be considered derivatives of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals. The term also includes organic peroxide formulations (mixtures). Organic peroxides are thermally unstable substances or mixtures, which may undergo exothermic self-accelerating decomposition. In addition, they may have one or more of the following properties:*

(a) be liable to explosive decomposition;

(b) burn rapidly;

(c) be sensitive to impact or friction;

(d) react dangerously with other substances.

1. Delete H5.2 and address organic peroxides under 'Explosive' (H1 option 2), 'Flammable' (H3 option 2) or 'Oxidizing' (H5.1 option 2) according to their characteristics

Supporting information, rationales and/or relevant scientific and technical considerations: "Organic peroxides" does not describe a specific hazard property, but a name given to a family of chemical compounds. Wastes should be assigned to the corresponding hazard according to the properties of the specific organic peroxides they contain (based on the attributable GHS hazard statements).

2. H5.2 Organic Peroxides

Organic substances which contain the bivalent-O-O structure and may be considered derivatives of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals. Organic peroxides are thermally unstable substances which may undergo exothermic self-accelerating decomposition

Supporting information, rationales and/or relevant scientific and technical considerations: Alignment with UN Model Regulations

H6.1 Poisonous (Acute)

Substances or wastes liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.

Related GHS definition:

Acute toxicity: Acute toxicity refers to serious adverse health effects (i.e., lethality) occurring after a single or short-term oral, dermal or inhalation exposure to a substance or mixture.

1. H6.1 Acute toxicity

Acute toxicity refers to serious adverse health effects (i.e., lethality) occurring after a single or shorter oral, dermal or inhalation exposure to a substance or mixture.

Supporting information, rationales and/or relevant scientific and technical considerations: Align with GHS definition for acute toxicity

2. H6.1 Acutely Toxic

Wastes which can cause acute toxic effects following oral or dermal administration, or inhalation exposure. If the sum of the concentrations of all substances contained in a waste, classified with an acute toxic hazard class and category code and hazard statement code given in Table 5, exceeds or equals the threshold given in that table, the waste shall be classified as hazardous by H[6.1]. When more than one substance classified as acute toxic is present in a waste, the sum of the concentrations is required only for substances within the same hazard category

The following cut-off values shall apply for consideration in an assessment:

- For Acute Toxicity 1, 2 or 3 (H300, H310, H330, H301, H311, H331): 0.1%;
- For Acute Toxicity 4 (H302, H312, H332): 1%

Table 5: Hazard Class and Category Code(s) and Hazard statement Code(s) for waste constituents and the corresponding concentration limits for the classification of wastes as hazardous by H[6.1]

Hazard Class and Category Code(s)	Hazard statement Code(s)	Concentration limit	Hazard Class and Category Code(s)	Hazard statement Code(s)	Concentration limit	Hazard Class and Category Code(s)	Hazard statement Code(s)	Concentration limit
Acute Toxicity 1 (Oral)	H300	0.1%	Acute Toxicity 1 (Dermal)	H310	0.25%	Acute Toxicity 1 (Inhalation)	H330	0.1%
Acute Toxicity 2 (Oral)	H300	0.25%	Acute Toxicity 2 (Dermal)	H310	2.5%	Acute Toxicity 2 (Inhalation)	H330	0.5%

Acute Toxicity 3 (Oral)	H301	5%	Acute Toxicity 3 (Dermal)	H311	15%	Acute Toxicity 3 (Inhalation)	H331	3.5%
Acute Toxicity 4 (Oral)	H302	25%	Acute Toxicity 4 (Dermal)	H312	55%	Acute Toxicity 4 (Inhalation)	H332	22.5%

Supporting information, rationales and/or relevant scientific and technical considerations: Grammatical adjustment of the title to align with other hazardous characteristics.

Ensure compatibility and clear links with GHS classification with hazard statements aligned with GHS. The concentration limits are based on the maximum permissible toxic burden by route of exposure and are correlated with the Acute Toxicity Estimate (ATE) LD50/LC50 values (lethal dose / lethal concentration causing 50% mortality) of the various hazard statements. GHS Category 5 is not considered, given this applies to substances of relatively low acute toxicity, that may pose a hazard to relevant populations. This has not been considered relevant in the context of waste management.

3. H6.1 Toxic substances (substances of relatively high acute toxicity)

Substances liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.

Includes only substances allocated to Category 1, 2 or 3 of Chapter 3.1 of the Globally Harmonized System of Classification and Labelling of Chemicals¹¹

Supporting information, rationales and/or relevant scientific and technical considerations¹²: hybrid approach between UN Model Regulations and GHS to separate high acute toxicity from low acute toxicity; note the proposed new entry 8.

Supporting information, rationales and/or relevant scientific and technical considerations¹³: Although the number of hazardous characteristics should be expanded to cover distinct hazardous characteristics that are not sufficiently addressed in Annex III, care should be taken to limit new characteristics to those strictly necessary so as to reduce the overall complexity of the classification system. Therefore, it might be better not to break down the current code H 6.1 for “acute toxicity” into two separate codes, covering GHS acute toxicity classes 1 to 3 and 4 and 5, respectively.

H6.2 Infectious substances

Substances or wastes containing viable micro-organisms or their toxins which are known or suspected to cause disease in animals or humans

Related UN Model Regulations definition:*

Infectious substances: *Infectious substances are substances known or reasonably expected to contain pathogens. Pathogens are defined as microorganisms (including bacteria, viruses, parasites, fungi) and other agents such as prions, which can cause disease in humans or animals.*

** Recommendations on the Transport of Dangerous Goods Model Regulations – 22nd Revised Edition (Vol. I & II)*

1. H6.2 Infectious

Wastes containing viable micro-organisms or their toxins which are known or reliably believed to cause disease in man or other living organisms. The attribution of H[6.2] shall be assessed by the rules laid down in reference documents or national legislation.

¹¹ Corresponds to the hazard classification system included in the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) (ST/SG/AC.10/30/Rev.8/, United Nations, New York, 2019).

¹² Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for option 4.

¹³ Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for option 4.

*Supporting information, rationales and/or relevant scientific and technical considerations:
The reference to “substances” should be deleted, because substances as such are not infectious.*

Align with the UN Model Regulations and expand definition to include, for example, diseases of plants. The text does not explicitly mention pathogens, but simply microorganisms and their toxins and relates them to causing disease.

2. H6.2 Infectious substances

Substances known or reasonably expected to contain pathogens. Pathogens are defined as microorganisms and other agents such as prions, which can cause disease in animals or humans.

*Supporting information, rationales and/or relevant scientific and technical considerations:
align with the UN Model Regulations*

H8 Corrosives

Substances or wastes which, by chemical action, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards.

Related GHS definitions:
Skin corrosion: Skin corrosion refers to the production of irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis occurring after exposure to a substance or mixture.
Corrosive to metals: A substance or a mixture which is corrosive to metals is a substance or a mixture which by chemical action will materially damage, or even destroy, metals.

1. H8 Corrosive

Wastes which on application can cause skin corrosion. When a waste contains one or more substances classified as Skin corrosion 1A, 1B or 1C (H314) and the sum of their concentrations exceeds or equals 5%, the waste shall be classified as hazardous by H[8]. The cut-off value for consideration in an assessment for Skin corrosion 1A, 1B, 1C (H314) is 1.0%.

*Supporting information, rationales and/or relevant scientific and technical considerations:
Revise language to focus on skin corrosion, with links to GHS classification and calculation criteria. Grammatical adjustment of the title to align with other hazardous characteristics.*

Aligned to hazard statements and concentrations in table 3.2.3. of GHS. The reference to metals has not been included, as all corrosives to metals will be skin corrosives.

2. H8 Corrosives

Substances which, by chemical action, will cause irreversible damage to the skin, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport

*Supporting information, rationales and/or relevant scientific and technical considerations:
Alignment with the UN Model Regulations*

H10 Liberation of toxic gases in contact with air or water

Substances or wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.

1. H10 Release of an acute toxic gas

Wastes which, releases acute toxic gases (Acute Toxicity 1, 2 or 3) in contact with water, damp air or an acid. When a waste contains substances or mixtures which in contact with water, damp air, or acids, evolve gases classified for acute toxicity in category 1, 2 or 3 in potentially dangerous amounts, it shall be classified as hazardous by H[10] according to test methods or guidelines.

*Supporting information, rationales and/or relevant scientific and technical considerations:
Revise language to clarify the characteristics of the released gases.*

Clarification of the title in line with the text.

A link to GHS hazard classes for acute toxicity of gases should be provided, but no specific equivalent hazard statement exists in GHS for this hazardous characteristic]

2. H10 Liberation of toxic gases in contact with air or water

Substances which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.

*Supporting information, rationales and/or relevant scientific and technical considerations:
Deletion of “wastes”*

Note: See also the proposed new entry 6a to include a new H-characteristic for ‘release of toxic gases in contact with acids’.

H11 Toxic (Delayed or chronic)

Substances or wastes which, if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, including carcinogenicity.

1. H11 Carcinogenic

Waste which induces cancer or increases its incidence. When a waste contains a substance classified by one of the following hazard class and category codes and hazard statement codes and exceeds or equals one of the following concentration limits shown in Table 6, the waste shall be classified as hazardous by H[11]. When more than one substance classified as carcinogenic is present in a waste, an individual substance has to be present at or above the concentration limit for the waste to be classified as hazardous by H[11].

Table 6: Hazard Class and Category Code(s) and Hazard statement Code(s) for waste constituents and the corresponding concentration limits for the classification of wastes as hazardous by H[11]

Hazard Class and Category Code(s)	Hazard statement Code(s)	Concentration limit
Carcinogenic 1A	H350	0.1%
Carcinogenic 1B	H350	0.1%
Carcinogenic 2	H351	1.0%

*Supporting information, rationales and/or relevant scientific and technical considerations:
Limit H11 to ‘Carcinogenic’ and complement with new entries (Mutagenic – proposed new entry 4b, Toxic for reproduction - new entry 3[, etc.]).*

Limitation of the title in line with the text.

H11 aligned with hazard class and categories in GHS chapter 3.6. Concentration limits consistent with table 3.6.1. of GHS.

2. H11 Toxic (Delayed or chronic)

Substances which, if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, not including substances covered by other codes in this Annex

*Supporting information, rationales and/or relevant scientific and technical considerations:
Delete the term “waste”. Refer to proposed additions for new*

hazardous characteristics for specific target organ toxicity (proposal 2b), germ cell mutagenicity (proposal 4c), serious eye damage/eye irritation, (proposal 10), respiratory/skin sensitization (proposal 11), carcinogenicity (proposal 12), reproductive toxicity (proposal 13), aspiration hazard (proposal 14).

H12 Ecotoxic

Substances or wastes which if released present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation and/or toxic effects upon biotic systems.

Related GHS definitions:

Acute aquatic toxicity: Means the intrinsic property of a substance to be injurious to an organism in a short-term aquatic exposure to that substance

Chronic aquatic toxicity: Means the intrinsic property of a substance to cause adverse effects to aquatic organisms during aquatic exposures which are determined in relation to the life-cycle of the organism.

1. H12 Ecotoxic

Wastes which presents or may present immediate or delayed adverse impacts to the environment. Wastes which fulfils any of the following conditions shall be classified as hazardous by H[12]:

- Waste which contains a substance classified as ozone depleting assigned the hazard statement code H420 and the concentration of such a substance equals or exceeds the concentration limit of 0.1%. [$c(\text{H420}) \geq 0.1\%$]
 - Waste which contains one or more substances classified as aquatic acute assigned the hazard statement code H400 and the sum of the concentrations of those substances equals or exceeds the concentration limit of 25%. A cut-off value of 0.1% shall apply to such substances. [$\sum c(\text{H400}) \geq 25\%$]
 - Waste which contains one or more substances classified as aquatic chronic 1, 2 or 3 assigned to the hazard statement code(s) H410, 411 or H412, and the sum of the concentrations of all substances classified as aquatic chronic 1 (H410) multiplied by 100 added to the sum of the concentrations of all substances classified as aquatic chronic 2 (H411) multiplied by 10 added to the sum of the concentrations or all substances classified as aquatic chronic 3 (H412) equals or exceeds the concentration limit of 25%. A cut-off value of 0.1% applies to substances classified as H410 and a cut-off value of 1% applies to substances classified as H411 or H412. [$100 \times \sum c(\text{H410}) + 10 \times \sum c(\text{H411}) + \sum c(\text{H412}) \geq 25\%$]
 - Waste which contains one or more substances classified as aquatic chronic 1, 2, 3 or 4 assigned the hazard statement code(s) H410, H411, H412 or H413 and the sum of the concentrations or all substances classified as aquatic chronic equals or exceeds the concentration limit of 25%. A cut-off value of 0.1% applies to substances classified as H410 and a cut-off value of 1% applies to substances classified as H411, H412 or H413. [$\sum c(\text{H410}) + \sum c(\text{H411}) + \sum c(\text{H412}) + \sum c(\text{H413}) \geq 25\%$]
- Where : Σ = sum and c= concentrations of the substances.

Supporting information, rationales and/or relevant scientific and technical considerations: Language, hazard classes, categories and hazard statements aligned with GHS. For simplification only Aquatic Acute 1 and Aquatic Chronic 1 to 4 are included. Calculation rules for mixtures based on equations in tables 4.1.3 (acute) and 4.1.4, but including certain simplifications for ease of application to waste classification. In particular, M factors are not applied. Further details can be found in Annex III of Directive 2008/98/EC (see <http://data.europa.eu/eli/dir/2008/98/2018-07-05>). See also: Hennebert et al 2014: <https://pubmed.ncbi.nlm.nih.gov/24994468/>

2. H12 Ecotoxic

Substances which if released present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation and/or toxic effects upon biotic systems, not including substances covered by other codes in this Annex.

Supporting information, rationales and/or relevant scientific and technical considerations: Delete the term "waste". Refer to proposed additions for new hazardous characteristics for hazardous to the aquatic environment (acute or chronic toxicity) (proposal 15)

H13 Capable, by any means after disposal, or yielding another material, e.g., leachate, which possesses any of the characteristics listed above.

0. Status quo

1. H13 Waste capable of exhibiting a hazardous characteristic listed above not directly displayed by the original waste – When a waste contains one or more substances that:
- are explosive when dry, or
 - may form explosive peroxides, or
 - may explode if heated under confinement,

The waste shall be classified as hazardous by H[13], unless the waste is in such a form that it will not under any circumstance exhibit explosive or potentially explosive properties. In

addition, waste may be classified as hazardous by H[13] based on other applicable criteria, such as an assessment of the leachate.

Supporting information, rationales and/or relevant scientific and technical considerations: Revise language to include details of waste content and conditions.

Clarification of the title.

The reference to H205 has been deleted, as H205 has been deleted in GHS revision 9.

Associated to specific EU hazard statements under the CLP Regulation which are not contained in GHS: Explosive when dry (EUH001), May form explosive peroxides (EUH019) and Risk of explosion if heated under confinement (EUH044).

In addition, waste can be classified based on assessment of its leachate.

There is no equivalent GHS or UN Model Regulations hazardous characteristic.

Tests

The potential hazard posed by certain types of wastes are not yet fully documented; tests to define quantitatively these hazards do not exist. Further research is necessary in order to develop means to characterise potential hazards posed to man and/or environment by these wastes. Standardized tests have been derived with respect to pure substances and materials. Many countries have developed national tests which can be applied to materials listed in Annex I, in order to decide if these materials exhibit any of the characteristics listed in this Annex.

1. *Delete and replace with explanation on testing in the general introduction*

2. Tests and classification principles

The potential hazards posed by certain types of wastes are not yet fully documented; tests to define quantitatively these hazards do not exist. Further research is necessary in order to develop means to characterise potential hazards posed to man and/or the environment by these wastes.

Standardized tests have been derived with respect to pure substances and materials. The *UN Manual of Tests and Criteria* contain criteria, test methods and procedures that can be applied to materials listed in Annex I, in order to decide if these materials exhibit any of the characteristics listed in this Annex, in conjunction with classification principles outlined in the *United Nations Recommendations on the Transport of Dangerous Goods* (2019), when appropriate. For hazardous characteristics 2(b), 3(b), 4(b), 5(b) and 8 to 12,¹⁴ the classification principles included in the Globally Harmonized System of Classification of Chemicals (2019) should be used instead. Many countries have developed national tests which can also be applied.

E. New proposed entries and text in Annex III

1. Irritant – skin irritation and eye damage

Waste which on application can cause skin irritation or damage to the eye. When a waste contains one or more substances in concentrations above the cut-off value, that are classified by one of the following hazard class and category codes and hazard statement codes and one or more of the following concentration limits is exceeded or equalled, the waste shall be classified as hazardous by H[...]. The cut-off value for consideration in an assessment for Skin corrosion 1A [H314], Skin irritation 2 (H315), Eye damage 1 (H318) and Eye irritation 2 (H319) is 1%. If the sum of the concentrations of all substances classified as Skin corrosion 1A (H314) exceeds or equals 1%, the waste shall be classified as hazardous according to H[...]. If the sum of the concentrations of all substances classified as H318 exceeds or equals 10%, the waste shall be classified as hazardous according to H[...]. If the sum of the concentrations of all substances classified H315 and/or H319 exceeds or equals 20%, the waste shall be classified as hazardous according to H[...]. Note that wastes containing substances classified as H314 (Skin corrosion 1A, 1B, or 1C) in amounts greater than or equal to 5% will be classified as hazardous by H8. H[...] will not apply if the waste is classified as H8.

Supporting information, rationales and/or relevant scientific and technical considerations: The text has been based on GHS hazard classes, categories and hazard statements. Concentration limits based on GHS but with some adaptation to make more appropriate for waste management. This refers primarily to limit of 20% assigned to H315-H319 (skin irritation + serious eye damage).

¹⁵ Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for 6(c).

2(a) Specific Target Organ Toxicity (STOT)/Aspiration Toxicity

When a waste contains one or more substances classified by one or more of the following hazard class and category codes and hazard statement codes shown in Table 4, and one or more of the concentration limits in Table 4 is exceeded or equalled, the waste shall be classified as hazardous according to H[...]. When substances classified as STOT are present in a waste, an individual substance has to be present at or above the concentration limit for the waste to be classified as hazardous by H[...]. When a waste contains one or more substances classified as Asp. Tox 1 and the sum of those substances exceeds or equals the concentration limit, the waste shall be classified as hazardous by H[...] only where the overall kinematic viscosity (at 40°C) does not exceed 20.5 mm²/s. The kinematic viscosity shall only be determined for fluids.

Table 4: Hazard Class and Category Code(s) and Hazard statement Code(s) for waste constituents and the corresponding concentration limits for the classification of wastes as hazardous by H[...].

Hazard Class and Category Code(s)	Hazard statement Code(s)	Concentration limit
STOT SE 1	H370	1%
STOT SE 2	H371	10%
STOT SE 3	H335	20%
STOT RE 1	H372	1%
STOT RE 2	H373	10
Aspiration Toxicity 1	H304	10

Supporting information, rationales and/or relevant scientific and technical considerations: Defined in chapter 3.8 and 3.9 of GHS. Not covered by UN Model Regulations.

In addition, and for the purpose of simplification towards waste classification, acute toxic effects due to Aspiration hazards associated to substances in waste, as defined in chapter 3.10 of GHS, relative to substances with hazard statement H304 “May be fatal if swallowed and enters the airways” are included under this hazardous characteristic. Aspiration Hazard of Category 2, identified with H305 “May be harmful if swallowed and enters the airways” has not been included, given it is considered of limited relevance to waste classification.

The proposed concentration limits for the attribution of the hazardous characteristic to waste, based on the concentration of individual substances classified with the corresponding hazard statements, are those under GHS for classification of mixtures. This is with the exception of the limit for STOT SE 3 substances, for which a concentration limit is not given under GHS (and for which a 20% limit has been defined).

2(b) Specific target organ toxicity

Specific target organ toxicity- single exposure refers to specific toxic effects on target organs occurring after a single exposure to a substance or mixture.

Specific target organ toxicity- repeated exposure refers to specific toxic effects on target organs occurring after repeated exposure to a substance or mixture.

Supporting information, rationales and/or relevant scientific and technical considerations: Alignment with the GHS

3(a) Toxic for reproduction (Reprotoxic)

Waste which has adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in the offspring. When a waste contains a substance classified by one of the following hazard class and category codes and hazard statement codes and exceeds or equals one of the following concentration limits shown in Table 7, the waste shall be classified hazardous according to H[...]. When more than one substance classified as toxic for reproduction is present in a waste, an individual substance has to be present at or above the concentration limit for the waste to be classified as hazardous by H[...].

Table 7: Hazard Class and Category Code(s) and Hazard statement Code(s) for waste constituents and the corresponding concentration limits for the classification of wastes as hazardous by H[...].

Hazard Class and Category Code(s)	Hazard statement Code(s)	Concentration limit
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Reprotoxic 1A	H360	0.3%
Reprotoxic 1B	H360	0.3%
Reprotoxic 2	H361	3.0%

*Supporting information, rationales and/or relevant scientific and technical considerations:
Defined in chapter 3.7 of GHS. Not covered by UN Model Regulations.*

*Applicable concentration limits are those defined in GHS for classification of mixtures.
The additional category of effects on or via lactation, covered under GHS and hazard statement H362 “May cause harm to breast-fed children” is not covered in the text given it is considered of limited relevance to waste classification.*

3(b) Reproductive toxicity

Reproductive toxicity refers to adverse effects on sexual function and fertility in adults, as well as developmental toxicity in the offspring, occurring after exposure to a substance or mixture, but not including induction of genetically based inheritable effects.

*Supporting information, rationales and/or relevant scientific and technical considerations:
Alignment with GHS*

4(a) Mutagenic for germ cells

Waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell. When a waste contains a substance classified by one of the following hazard class and category codes and hazard statement codes and exceeds or equals one of the following concentration limits shown in Table 8, the waste shall be classified as hazardous according to H[...]. When more than one substance classified as mutagenic is present in a waste, an individual substance has to be present at or above the concentration limit for the waste to be classified as hazardous by H[...].

Table 8: Hazard Class and Category Code(s) and Hazard statement Code(s) for waste constituents and the corresponding concentration limits for the classification of wastes as hazardous by H[...].

Hazard Class and Category Code(s)	Hazard statement Code(s)	Concentration limit
Mutagenic 1A	H340	0.1%
Mutagenic 1B	H340	0.1%
Mutagenic 2	H341	1%

*Supporting information, rationales and/or relevant scientific and technical considerations:
Defined in chapter 3.5 of GHS. Not covered by UN Model Regulations.*

*Applicable concentration limits are those defined in GHS for classification of mixtures.
The wording “mutagenic to germ cells” is proposed for consistency with other hazardous characteristics in which adjectives are used.*

4(b) Germ cell mutagenicity

Germ cell mutagenicity refers to heritable gene mutations, including heritable structural and numerical chromosome aberrations in germ cells occurring after exposure to a substance or mixture.

*Supporting information, rationales and/or relevant scientific and technical considerations:
Alignment with GHS*

5(a) Sensitising

Waste which contains one or more substances known to cause sensitising effects to the skin or the respiratory organs. When a waste contains a substance classified as sensitising and is assigned to one of the hazard statement codes H317 or H334 and one individual substance equals or exceeds the concentration limit of 10%, the waste shall be classified as hazardous by H[...].

*Supporting information, rationales and/or relevant scientific and technical considerations:
Defined in chapter 3.4 of GHS. Applicable concentration limit deviates from that defined in GHS for classification of mixtures (10% proposed vs 1% in GHS). The reason for this is that on account*

on different exposure scenarios during waste management vs consumer use (e.g. application of products on the skin).

5(b) Respiratory/skin sensitization

Respiratory sensitization refers to hypersensitivity of the airways occurring after inhalation of a substance or a mixture.

Skin sensitization refers to an allergic response occurring after skin contact with a substance or a mixture.

*Supporting information, rationales and/or relevant scientific and technical considerations:
Alignment with GHS*

6(a) Flammable gases

Flammable Gases, which consists of gases that, at 20°C and an absolute pressure of 101.3 kPa,

- (i) are ignitable when in a mixture of 13 per cent or less by volume with air, or
- (ii) have a flammability range with air of at least 12 percentage points determined in accordance with tests or calculations in ISO 10156, or a comparable evidence recognized by a national competent authority

*Supporting information, rationales and/or relevant scientific and technical considerations:
Alignment with the UN Model Regulations (class 2.1)*

Note: see also option 2 under H3

6(b) Non-flammable, non-toxic gases

Gases which:

- (i) are asphyxiant-gases which dilute or replace the oxygen normally in the atmosphere, or
- (ii) are oxidizing- gases which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does, as determined by a method specified in ISO 10156, or a comparable evidence recognized by a national competent authority

*Supporting information, rationales and/or relevant scientific and technical considerations¹⁵:
Alignment with the UN Model Regulations (class 2.2)*

Supporting information, rationales and/or relevant scientific and technical considerations¹⁶: The characteristic "Non-flammable, non-toxic gases" seems of little relevance for waste classification (which very rarely has to deal with gases). For the purpose of simplification it is suggested to exclude 6(c) from Annex III.

Note: see also option 2 under H5.1

6(c) Toxic gases

Gases which:

- (i) are known to be so toxic or corrosive to humans or other as to pose a hazard to health according to CGA P-20, ISO Standard 10298, or a comparable evidence recognized by a national competent authority, or
- (ii) are presumed to be toxic or corrosive to humans because they have an LC₅₀ value equal to or less than 5000 ml/m³

*Supporting information, rationales and/or relevant scientific and technical considerations:
Alignment with the UN Model Regulations (class 2.3)*

Note: see also option 2 under H10

¹⁵ Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for 6(c).

¹⁶ Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for 6(c).

6bis Persistent, Bioaccumulative and Toxic (PBT) and very Persistent and very Bioaccumulative (vPvB) properties (if not included in H12)

7. Persistent organic pollutant

A persistent organic pollutant is a substance or mixture that is persistent, that bio-accumulates and that is likely, as a result of its long-range environmental transport, to lead to significant adverse human health and/or environmental effects

*Supporting information, rationales and/or relevant scientific and technical considerations¹⁷:
Alignment with the Stockholm Convention*

*Supporting information, rationales and/or relevant scientific and technical considerations¹⁸:
“Persistent organic pollutant” should not be added as a distinct hazardous characteristic, considering this is as such not a hazardous characteristic, but a legal definition that can be attributed to certain substances under the Stockholm Convention.*

Note: see text on POPs in options 1 and 2 for a General introduction

8. Toxic substances (substances of relatively low acute toxicity)

Includes only substances allocated to Category 4 or 5 of Chapter 3.1 of the Globally Harmonized System of Classification and Labelling of Chemicals. (note the related hazardous characteristic H6.1)

*Supporting information, rationales and/or relevant scientific and technical considerations¹⁹:
Alignment with GHS*

*Supporting information, rationales and/or relevant scientific and technical considerations²⁰:
“Low toxicity” substances should not be added under a separate hazardous characteristic, as the number of hazardous characteristics should be limited to those strictly necessary so as to reduce the overall complexity of the classification system for waste.*

Note: see option 4 under H6.1

9. Serious eye damage/eye irritation

Serious eye damage refers to the production of tissue damage in the eye, or physical decay of vision, which is not fully reversible, occurring after exposure of the eye to a substance or mixture.

Eye irritation refers to the production of changes in the eye, which are fully reversible, occurring after the exposure of the eye to a substance or mixture.

*Supporting information, rationales and/or relevant scientific and technical considerations²¹:
Alignment with GHS*

Supporting information, rationales and/or relevant scientific and technical considerations²²: To reduce overall complexity of the classification system, this characteristic should be kept together with cutaneous effects under “Irritant” or “Corrosive”.

Note: see H8 and proposed new entry 1

¹⁷ Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for 7.

¹⁸ Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for 7.

¹⁹ Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for 8.

²⁰ Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for 8.

²¹ Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for 9.

²² Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for 9.

10. Carcinogenicity

Carcinogenicity refers to the induction of cancer or an increase in the incidence of cancer occurring after exposure to a substance or mixture. Substances and mixtures which have induced benign and malignant tumours in well performed experimental studies on animals are considered also to be presumed or suspected human carcinogens unless there is strong evidence that the mechanism of tumour formation is not relevant for humans.

*Supporting information, rationales and/or relevant scientific and technical considerations:
Alignment with GHS*

Note: see option 2 under H11

11. Aspiration hazard

Aspiration hazard refers to severe acute effects such as chemical pneumonia, pulmonary injury or death occurring after aspiration of a substance or mixture.

*Supporting information, rationales and/or relevant scientific and technical considerations²³:
Alignment with GHS*

*Supporting information, rationales and/or relevant scientific and technical considerations²⁴:
There is no need to define this characteristic separately. This characteristic should be integrated in option 2(a) above (on STOT), even if under GHS they are dealt with separately from STOT.*

Note: see proposed new entry 2a

12. Hazardous to the aquatic environment (acute or chronic toxicity)

An environmentally hazardous substance to the aquatic environment is a substance that satisfies the criteria for categories Acute 1, Acute 2, Acute 3, Chronic 1, Chronic 2 or Chronic 3 according to Chapter 4.1 of the Globally Harmonized System of Classification and Labelling of Chemicals.

Acute aquatic toxicity means the intrinsic property of a substance to be injurious to an organism in a short-term aquatic exposure to that substance.

Chronic aquatic toxicity means the intrinsic property of a substance to cause adverse effects to aquatic organisms during aquatic exposures which are determined in relation to the life-cycle of the organism.

*Supporting information, rationales and/or relevant scientific and technical considerations:
Alignment with GHS*

Note: see option 2 under H12

13. Endocrine [disruptor] [disruption]

An endocrine disruptor is an exogenous substance or mixture that alters function(s) of the endocrine system and consequently causes adverse health effects in an intact organism, or its progeny, or (sub) populations

Supporting information, rationales and/or relevant scientific and technical considerations²⁵:Based on references from the World Health Organization

²³ Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for 11.

²⁴ Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for 11.

²⁵ Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for 13.

Supporting information, rationales and/or relevant scientific and technical considerations²⁶: The possible attribution of a new hazardous characteristic to endocrine disrupting substances is a matter that should be discussed for substances and mixtures in future possible work to amend GHS, and only then potentially considered under Annex III of the Basel Convention. Furthermore, some relevant hazardous characteristics associated to some endocrine disrupting substances, such as oestrogenic and anti-androgenic effects are already potentially covered under the hazardous characteristic proposed for “reproductive toxicity”.

²⁶ Members have put forward different supporting information, rationales and/or relevant scientific and technical considerations for 13.

Appendix II to the [draft] recommendations by the expert working group pertaining to Annex III to the Convention

Whether any additional characteristics in relation to plastic waste should be added to Annex III to the Convention

The following characteristics seem relevant [in relation to plastic wastes] [to classify plastic wastes as hazardous]:²⁷

- a) From the current entries: [H 6.1 Poisonous (Acute), and H 6.2 Infectious substances], H11 (Toxic (Delayed or chronic)) - see the proposal to limit H11 to Carcinogenic -, H12 (Ecotoxic), and possibly H13 (Capable, by any means, after disposal, of yielding another material, e.g., leachate, which possesses any of the characteristics listed above);
- b) From the new proposed entries: 3(a) (Toxic for reproduction), 3(b) (Reproductive toxicity), 4(a) (Mutagenic for germ cells), 4(b) (Germ cell mutagenicity), 7 (POPs), 12 (Hazardous to the aquatic environment (acute or chronic toxicity) and 13 (Endocrine [disruptor] [disruption])”.

²⁷ Note that certain options under the current entries are wider than the current entries and may therefore also be relevant.

