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**Conference of the Parties to the Basel Convention
on the Control of Transboundary Movements of
Hazardous Wastes and Their Disposal**

Fourteenth meeting

Geneva, 29 April–10 May 2019

Item 4 (c) (ii) of the provisional agenda*

**Matters related to the implementation of the
Convention: legal, compliance and governance
matters: providing further legal clarity**

**Recommendations for revisions to Annex IV and Annex IX
(B1110) prepared by the expert working group on the review of
the Annexes**

Note by the Secretariat

As is mentioned in the note by the Secretariat on providing further legal clarity (UNEP/CHW.14/14), the annexes to the present note set out the recommendations for revisions to Annex IV and Annex IX (B1110) prepared by the expert working group on the review of the Annexes (annex I), alongside information on the work of the group since the eleventh meeting of the Open-ended Working Group (annex II). The recommendations for revisions to Annex IV and Annex IX (B1110) include corrections made to the version of the recommendations for revisions to Annex IV and Annex IX (B1110) made available to Parties and observers on 8 January 2019, in particular with respect to the description of operations D20, D21, R10 and R17. The present note, including its annexes, has not been formally edited.

* UNEP/CHW.14/1.

Annex I

Recommendations by the expert working group on the review of the Annexes for revisions to Annex IV and Annex IX (B1110) for consideration by the Conference of the Parties at its fourteenth meeting

I. Revisions to Annex IV of the Basel Convention

1. The expert working group on the review of the Annexes recommends that revisions to Annex IV should:

- (a) 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:
 - (i) Improve/update the description of disposal operations in Annex IV;
 - (ii) Improve environmental controls by including additional disposal operations that occur in practice or could occur in practice in Annex IV;
 - (iii) Clarify the descriptions in Annex IV and in Annex IX (B1110) to address conflicts or overlaps;
 - (b) Maintain the two sections of Annex IV (section A and section B), with captions and introductions for each section;
 - (c) Add a general introduction¹ for Annex IV;
 - (d) Include new operations;
 - (e) Take into account that Annex IV relates to defining wastes and that, accordingly, it encompasses:
 - (i) Both environmentally sound and non-environmentally sound operations;
 - (ii) Operations irrespective of whether they are legal or illegal;
 - (iii) Operations regardless of whether they do not, or only rarely, occur in practice;
 - (iv) Operations regardless of whether they are relevant or not in the context of a transboundary movement;
 - (f) Ensure consistency in the way operations are described in both sections of the Annex.
2. The expert working group on the review of the Annexes also recommends that further work on the review of Annex IV be based on the recommended options set out in annex I to the present recommendations and on new options as needed.
3. Options for revisions to Annex IV are set out in appendix I to the present recommendations.

II. Revisions to Annex IX (B1110) of the Basel Convention

4. The expert working group on the review of the Annexes recommends that further work on the revisions to Annex IX be based on the work it has carried out so far and include the review of mirror entry A1180, as recommended by the eleventh meeting of the Open-ended Working Group to the Conference of the Parties in its decision OEWG-11/12.

¹ The textual proposal for a general introduction for Annex IV, as presented but not agreed during the second meeting of the expert working group, is set out in appendix II to the present recommendations.

Appendix I to the recommendations by the expert working group

Recommended options for revisions to Annex IV

1. The following are recommended options prepared by the expert working group on the review of the Annexes during its second meeting (Buenos Aires, Argentina, 10-13 December 2018) for revisions to Annex IV. The options cover both the captions and introductory texts for Annex IV A and IV B as well as the R and D operations listed in both sections of Annex IV.
2. Each R and D operation set out in Annex IV has been reviewed by the expert working group. The recommended options do not necessarily reflect the views of all the members and are meant to convey the content of the discussions.
3. Each option that is recommended was supported by at least one member of the expert working group. The status quo, namely the current drafting of an operation, was supported by at least one member for most operations; when the status quo is not reflected as an option, it is because no member supported it. The options either set out a new drafting proposal for an operation, or a proposed action (e.g. delete, split, merge). Proposed new operations (D16 to D22 and R14 to R17) are listed after operations currently listed in Annex IV for ease of reference, the ordering of the operations will be considered by the expert working group in due course. The proposal to have subcategories for operations (e.g. D8.01), the proposed text for a general introduction for Annex IV2, and the text of operations set out in parentheses were presented but not discussed.
4. The expert working group agreed that, should the status quo be retained as an option, any reference to “etc.” would need to be deleted. The group also agreed to not use “etc.” in new textual proposals for operations and in new operations.
5. More information on the second meeting of the expert working group on the review of the Annexes including meeting documents is available at:
<http://www.basel.int/Implementation/LegalMatters/LegalClarity/Meetings/2ndRAEWGmtg/tabid/7690/Default.aspx>.

A. Options for captions and introductory texts for Annex IV A and IV B

I. Annex IV A

1. Option 1: status quo

A. OPERATIONS WHICH DO NOT LEAD TO THE POSSIBILITY OF RESOURCE RECOVERY, RECYCLING, RECLAMATION, DIRECT RE-USE OR ALTERNATIVE USES
 Section A encompasses all such disposal operations which occur in practice.

2. Option 2

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.

3. Option 3

A. FINAL DISPOSAL OPERATIONS

Final disposal operations are those that don't have as main purpose to recover resources from wastes, even if the operations recover resources as a secondary consequence.

4. Option 4

A. FINAL DISPOSAL OPERATIONS

A final disposal operation is an operation which is not a recovery operation. Final disposal operations include operations that have as a secondary consequence the reclamation of useful materials or energy.

² See appendix II

5. Option 5

A. FINAL DISPOSAL OPERATIONS WHICH DO NOT LEAD TO THE POSSIBILITY OF RESOURCE RECOVERY, RECYCLING, RECLAMATION, RE-USE OR ALTERNATIVE USES
Annex IV.A encompasses all operations which lead to or are final disposal operations.

II. Annex IV B

1. Option 1: status quo

B. OPERATIONS WHICH MAY LEAD TO RESOURCE RECOVERY, RECYCLING RECLAMATION, DIRECT RE-USE OR ALTERNATIVE USES

Section B encompasses all such operations with respect to materials legally defined as or considered to be hazardous wastes and which otherwise would have been destined for operations included in Section A.

2. Option 2

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.

3. Option 3

B. RECOVERY AND RECYCLING 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.

4. Option 4

B. RECOVERY AND RECYCLING OPERATIONS

Recovery and recycling operations are those that have as main purpose to make use of waste by serving a useful purpose, either by bringing it back into productive use, or replacing other materials or recovering energy from it.

B. Options for Annex IV A

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

1. Deposit onto land other than covered by D5, option 1 (e.g. placement of solids, liquids or sludges into pits; permanent aboveground storage)
2. Deposit into or onto land, (e.g. non-engineered landfill, dumpsites) other than by any operations D3 to D5 or D12

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

0. Status quo
 1. Land treatment in situ (e.g. biodegradation or chemical treatment in soils)
 2. Treatment of land in situ and ex situ:
 - Landfarming
 - Other than landfarming

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

0. Status quo

1. Deposit into land other than that covered by D12 (e.g. injection into wells, salt domes of naturally occurring repositories)
2. Deep injection into environmentally engineered locations, (e.g., injection of pumpable discards into wells, salt domes of naturally occurring repositories)

D4: Surface impoundment, (e.g., placement of liquid or sludge discards into pits, ponds or lagoons, etc.)

0. Status quo
1. Surface impoundment, (e.g., placement of liquid or sludge discards into pits, tailings ponds, tailings dams or lagoons)
2. Delete and merge partly with D1, option 1

D5: Specially engineered landfill, (e.g., placement into lined discrete cells which are capped and isolated from one another and the environment, etc.)

0. Status quo
1. Landfilling
2. Engineered landfill (i.e. placement isolated from the environment with, if needed, venting systems, leachate collection and draining systems)

D6: Release into a water body except seas/oceans

0. Status quo

D7: Release into seas/oceans including sea-bed insertion

0. 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

0. Status quo
1. Biological treatment prior to submission to any of the operations in Section A.
2. Split in 2:

D8: Biological treatment as an interim operation prior to any of operations in section A

D8 bis. Biological treatment as a final operation

- D8.01: aeration lagoons
- D8.02: bioventilation (bioventing)
- D8.03: activated sludge
- D8.04: biopiles with added nutrients (composting)
- D8.05: UASB reactors
- D8.06: full mix digesters
- D8.07: another aerobic treatment
- D8.09: another anaerobic treatment

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.)

0. Status quo
1. Physical/mechanical treatment (e.g. evaporation, drying), physical/chemical treatment (e.g. solvent extraction) and chemical treatment (e.g. neutralization, precipitation), immobilization (stabilization, solidification) prior to submission to any of the operations in Section A.

2. Split in 2:

D9 Physico chemical treatment as an interim operation prior to any of operations in section A

D9 bis. Physico chemical treatment as a final operation

D9.01: evaporation, drying, dehydration

D9.02: precipitation, flotation, flocculation, coagulation, decantation

D9.03: phase separation, adsorption, desorption, absorption

D9.04: neutralization

D9.05: treatment by adsorption / desorption of activated carbon

D9.06: dechlorination

D9.07: decomposition by oxidation and / or reduction

D9.08: centrifugation, filtering and other selective separation media

D9.09: steam air treatment, condensation

D9.10: autoclave or other similar technology that uses pressure and temperature as process variables, for decontamination of contaminated solids

D9.11: blending or mixing of waste

D9.12: segregation or classification

D9.13: Washing or decontamination

D9.14: Crushing

D9.15: Balling

D9.16: Microencapsulated

D9.17: Macroencapsulation

D9.18: Chemical stabilization

D9.19: Physical stabilization

D9.20: disassembly or separation of components

D9.21: Another waste conditioning operation for further treatment or final disposal

D10: Incineration on land

0. Status quo

1. Thermal treatment (e.g. incineration)

2. Thermal treatments

D10.01: incineration, thermic oxidation or pyrolysis

D10.02: co-incineration

D10.03: gasification

D10.04: thermal desorption

D10.05: vitrification

D10.06: other D10

D11: Incineration at sea

0. Status quo

1. Delete and merge with D10 option 1

2. Delete

D12: Permanent storage (e.g., emplacement of containers in a mine, etc.)

0. Status quo

1. Permanent underground storage (e.g. emplacement of containers in a mine)
(*Note: permanent aboveground storage is encompassed in D1 option 1*)

2. Split in 2:

D12 Permanent underground storage (e.g. emplacement of containers in a mine)

D12 bis: Permanent aboveground storage

D13: Blending or mixing prior to submission to any of the operations in Section A

0. Status quo
1. Mechanical treatment (e.g. dismantling, sorting, crushing, compacting, pelletizing, shredding, conditioning, repackaging, separating, blending, mixing) prior to submission to any of the operations in section A
2. Mechanical operations (e.g. dismantling, sorting, crushing, compacting, pelletizing, shredding, conditioning, repackaging, separating) prior to submission to any of the operations in section A
3. Delete and merge with D9 option1

D14: Repackaging prior to submission to any of the operations in Section A

0. Status quo
1. Delete and merge with D13, option 1
2. Delete and merge with D15

D15: Storage pending any of the operations in Section A

1. Temporary storage pending any of the operations in section A
2. Temporary storage pending any of the operations in Section A

D15.01: with transfer or repackage

D15.02: without transfer or repackage

NEW OPERATIONS**D16: Release to the atmosphere (e.g. venting of compressed or liquefied gases)****D17: Treatment of waste by nanomaterials****D18: Open burning****D19: Treatment of sterilization or decontamination of biopathological waste**

D19.01: autoclave

D19.02: microwave - radio waves.

D19.03: physical sterilization

D19.04: chemical sterilization

D19.05: other method or technology not specified

D20: Final disposal operations other than covered by D1 option1, D2 option1, D3 option1, D5 option1, D6, D7 D10 option1, D12 option1 and D16 above**D21: Other treatment than covered by D8 option1, D9 option1 and D13 option1 above prior to submission to any of the operations in Section A****D22:**

1. Operations addressing stabilization and solidification
2. Immobilization (e.g. stabilization, solidification) prior to submission to any of the operations in section A

C. Options for Annex IV B**R1: Use as a fuel (other than in direct incineration) or other means to generate energy**

0. Status quo

1. Use as a fuel or other means to generate energy
2. Thermal treatment with the principal purpose to generate energy (e.g. incineration, co-processing)

R2: Solvent reclamation/regeneration

0. Status quo
1. Delete and merge with R3 option1 and R5 option1
2. Solvent reclamation/regeneration.

R2.01: distillation / rectification

R2.02: filtered

R2.03: other R2

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

0. Status quo
1. Recycling of organic substances
2. Recovery of organic substances which are not used as solvents

R4: Recycling/reclamation of metals and metal compounds

0. Status quo
1. Recycling of metals and metal compounds
2. Recovery of metals and metal compounds
 - R4.01: precipitation
 - R4.02: pyrometallurgy
 - R4.03: hydrometallurgy
 - R4.05: unspecified metallurgical processes
 - R4.05: distillation
 - R4.06: decontamination
 - R4.07: metal casting

R5: Recycling/reclamation of other inorganic materials

0. Status quo
1. Recycling of other inorganic materials
2. Recovery of other inorganic materials

R6: Regeneration of acids or bases

0. Status quo
1. Recycling of acids or bases
2. Delete R6 and merge with R3 option1 and R5 option1

R7: Recovery of components used for pollution abatement

0. Status quo
1. Recycling of pollution abatement equipment
2. Delete R7 and merge with R3 option1, R4 option1 and R5 option1
3. Recovery of components used for pollution control

R7.01: Recovery or regeneration of activated carbon
 R7.02: another treatment applied to used components

R8: Recovery of components from catalysts

0. Status quo
1. Recycling of catalysts
2. Recycling/reclamation of catalysts
3. Delete R8 and merge with R3 option1, R4 option1 and R5 option1
4. Recovery of components from catalysts
 - R8.01: hydrometallurgy
 - R8.02: pyrometallurgy
 - R8.03: other R8

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

0. Status quo
1. Re-refining of used oil
2. Refining of used oils and other reusable fluids.
3. Delete and merge with R3 option1
4. Recovery of used oil and hydrocarbons
 - R9.01: filtering or rectification
 - R9.02: distillation of natural or synthetic hydrocarbon-based waste
 - R9.03: use without the need of any further operation from this Annex

R10: Land treatment resulting in benefit to agriculture or ecological improvement

0. Status quo
1. Use of waste for soil, agriculture or other ecological improvement
2. Land treatment other than in D2 resulting in benefit to agriculture or ecological improvement
3. Delete and merge with a catchall element in a new operation (R17)
4. Land treatment resulting in benefit to agriculture or ecological improvement:
 - R10.01: valorization of phosphorus or nitrogen content
 - R10.02: preparation or manufacture of amendments or fertilizers
 - R10.03: improvement of disaggregated soils without an agronomic purpose

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. Blending or mixing of wastes prior to submission to any of the operations numbered R1-R11
2. Mechanical treatment other than blending and mixing of wastes prior to submission to any of the operations numbered R1-R11
3. Split and replace by 4 new operations
 - R12 Biological treatment prior to submission to any of the operations in section B

R12 bis Physical/mechanical treatment (e.g. evaporation, drying), physical/chemical treatment (e.g. solvent extraction), chemical treatment (e.g. neutralization, precipitation) prior to submission to any of the operations in section B

R12 ter Mechanical treatment (e.g. dismantling, sorting, crushing, compacting, pelletizing, shredding, conditioning, repackaging, separating, blending, mixing) prior to submission to any of the operations in section B

R12 quater Other treatment than covered by R12, R12bis and R12 ter above prior to submission to any of the operations in section B

4. Physical, mechanical and / or chemical treatment

R12.01: evaporation, drying, dehydration

R12.02: precipitation, flotation, flocculation, coagulation, decantation

R12.03: phase separation, adsorption, desorption, absorption

R12.04: neutralization

R12.05: treatment by adsorption / desorption of activated carbon

R12.06: dechlorination

R12.07: decomposition by oxidation and / or reduction

R12.08: centrifugation, filtering and other selective separation media

R12.09: steam air treatment, condensation

R12.10: autoclave or other similar technology that uses pressure and temperature as process variables, for decontamination of contaminated solids

R12.11: blending or mixture of waste

R12.12: segregation or classification

R12.13: Washing or decontamination

R12.14: Crushing

R12.15: Balanced

R12.16: Microencapsulation

R12.17: Macroencapsulation

R12.18: Chemical stabilization

R12.19: Physical stabilization

R12.20: disassembly or separation of components

R12.21: Another waste conditioning operation for further treatment or final disposal

R12.22: other R12

R13: Accumulation of material intended for any operation in Section B

1. Temporary storage pending any of the operations in section B

2. Temporary storage pending any of the operations in Section B

R13.01: with transfer or repackage

R13.02: without transfer or repackage

NEW OPERATIONS

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

R15: Co-processing

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

R17: Recovery other than covered by R1 option2, R3 option1, R4 option1, R5 option1 and R14

Appendix II to the recommendations by the expert working group

General introduction for Annex IV

Annex IV Disposal operations

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

This Annex covers disposal operations including interim operations.

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

The principal purpose of a treatment determines the selection of an operation.

Annex II

Information on the work of the expert working group on the review of the Annexes since the eleventh meeting of the Open-ended Working Group

1. Following the eleventh meeting of the Open-ended Working Group (Geneva, 3 to 6 September 2018), on 6 September 2018, the expert working group held consultations at which time participants exchanged views on three of the overarching and cross-cutting issues pertaining to the review of Annex IV, in light of the comments received from members and observers, namely: whether to substantially revise Annex IV to the Basel Convention, or to make adjustments to the Annex without changing its structure; whether to include catch-all operations in Annex IV; and the rationale for retaining the references to “direct reuse” in the heading of Annex IV and in Annex IX (B1110). During the consultations, participants also exchanged views on approaches and solutions to advance the work on overarching and cross-cutting issues, and the path forward until the second meeting of the EWG regarding those issues.
 2. The expert working group also held consultations on 27 November 2018 in view of its second meeting (Buenos Aires, Argentina, 10 to 13 December 2018), at which time members exchanged views on the tentative schedule for that meeting.
 3. Information on the second meeting of the expert working group, including meeting documents and the report of the meeting, are available on the website of the Convention at:
<http://www.basel.int/Implementation/LegalMatters/LegalClarity/Meetings/2ndRAEWGmtg/tabid/7690/Default.aspx>
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