**Working document for Annex IV.A**

**Decision BC-13/2: Mandate for the review of Annex IV**

1. Improve/update the description of disposal operations in Annex IV; and,
2. Improve environmental controls by including additional disposal operations that occur in practice or could occur in practice in Annex IV.

**How to use this document:** Please complete the table with your comments, including ‘problem statement’, ‘proposed change’ and ‘rationale’. Leave blank if no change is required. **Bold** **and** **underline** for additions and strikethrough (e.g., ~~strikethrough~~) for deletion of text.

**Submitting member/observer: Chile**

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| **A** | **B** | **C** | **D** | **E** |
| **Annex IV.A** | **Problem statement** | **Proposed change** | **Rationale** | **General comments** |
| **Caption text**   1. OPERATIONS WHICH DO NOT LEAD TO THE POSSIBILITY OF RESOURCE RECOVERY, RECYCLING, RECLAMATION, DIRECT RE-USE OR ALTERNATIVE USES | Large text.  Incorrect text, as no reference to re-use or use should be made | **FINAL DISPOSAL OPERATIONS**  ~~A. OPERATIONS WHICH DO NOT LEAD TO THE POSSIBILITY OF RESOURCE RECOVERY, RECYCLING, RECLAMATION, DIRECT RE-USE OR ALTERNATIVE USES~~ | 1. Simplifying 2. Correction  * elimination of “direct re-use or alternative uses” * “do not lead to the possibility…” as this can be interpreted differently: in general? in a specific facility? |  |
| **Introductory text**  Section A encompasses all such disposal operations which occur in practice. | The actual introductory text does not say anything additional | ~~Section~~ **Annex IV.**A encompasses all ~~such disposal~~ operations**which lead to or are final disposal operations** ~~occur in practice.~~ | Not all operations in the list are final disposal operations, the list includes preparatory operations |  |
| **General comments** | | | | |
| *This list considers various operations which in fact are not final operations, as further steps are needed. This should be made clear* | | | | |
| *The correction of the caption and introductory text should be applied for Annex IV.B in the same way* | | | | |
| *Nearly all final disposal operations generate hazardous waste that require disposal in a specially engineered landfill (or specially engineered domes)* | | | | |

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| **A** | | **B** | **C** | **D** | **E** |
| Disposal operation | | **Problem statement** | **Proposed change** | **Rationale** | **General comments** |
| **D1** | Deposit into or onto land, (e.g., landfill, etc.) | There are various deposit operations with a different name. | ~~Deposit into or onto land, (e.g., landfill, etc.)~~ | The manual on D5 says, in parr.12 on Specially Engineered Landfill: “*This form of landfill however…. is sometimes the only practicable disposal option for wastes, in particular for hazardous wastes.*” | D1 will be replaced by D3 (into land) and D5 (onto land) |
| **D2** | Land treatment, (e.g., biodegradation of liquid or sludgy discards in soils, etc.) | It is doubtful if there are specific soils for biodegradation of hazardous waste. A review of the registers, or questionnaire to the SIWG members, might be useful to make this clear |  |  |  |
| **D3** | Deep injection, (e.g., injection of pumpable discards into wells, salt domes of naturally occurring repositories, etc.) | This is and never will be ESM, as pumpable discards are not and will never be able to be controlled. Nevertheless, final disposal in salt domes might be considered ESM.  Eventually this alternative might be replaced by D12 | **Specially engineered domes** ~~Deep injection,~~ (e.g., ~~injection of pumpable discards into wells~~ **emplacement of containers with solid or solidified waste in** salt domes of naturally occurring repositories~~, etc.~~) |  | This should be limited to solid or solidified waste. Not even liquids or gases inside containers should be allowed, as no accurate control is possible. The same as D5. |
| **D4** | Surface impoundment, (e.g., placement of liquid or sludge discards into pits, ponds or lagoons, etc.) | This is and never will be ESM, as surface impoundment is not and will never be able to be controlled. | ~~Surface impoundment, (e.g., placement of liquid or sludge discards into pits, ponds or lagoons, etc.)~~ |  |  |
| **D5** | Specially engineered landfill, (e.g., placement into lined discrete cells which are capped and isolated from one another and the environment, etc.) | D5 should be limited to solid or solidified waste. Not even liquids or gases inside containers should be allowed, as no accurate control is possible | Specially engineered landfill, (e.g., placement **of solid or solidified waste** into lined discrete cells which are capped and isolated from one another and the environment~~, etc~~.) |  |  |
| **D6** | Release into a water body except seas/oceans | This is and never will be ESM, as it is not possible to be controlled | ~~Release into a water body except seas/oceans~~ |  |  |
| **D7** | Release into seas/oceans including sea-bed insertion | This is and never will be ESM, as it is not possible to be controlled | ~~Release into seas/oceans including sea-bed insertion~~ |  |  |
| **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 this Annex which results in final compounds or mixtures which are discarded by means of~~ **previous to** any of the operations in ~~Section~~ **Annex IV.**A | Biological treatment might also be applied before recovery operations. | Specific examples might be included (see D9) |
| **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.) |  | Physico chemical treatment ~~not specified elsewhere in this~~  ~~Annex which results in final compounds or mixtures which are discarded by means of~~ **previous to** any of the operations in ~~Section~~ **Annex IV.**A, (e.g., ~~evaporation, drying,~~ calcination, neutralization, precipitation, etc.) | Evaporation and drying are physical operations and should be considered as pretreatment, and as such not be included in Annex IV |  |
| **D10** | Incineration on land | The difference to incineration and energy recovery (operations mentioned in Annex IV.B) should be clarified | Incineration on land **without energy recovery** |  | Further steps are needed to discard the wastes generated by the incineration. |
| **D11** | Incineration at sea | This is and never will be ESM, as incineration at sea is forbidden. | ~~Incineration at sea~~ |  |  |
| **D12** | Permanent storage (e.g., emplacement of containers in a mine, etc.) | Permanent storage is considered a final step. There is no difference between D3 and D12, so this alternative should be eliminated and replaced by D3 | ~~Permanent storage (e.g., emplacement of containers in a mine, etc.)~~ |  |  |
| **D13** | Blending or mixing prior to submission to any of the operations in Section A |  | Blending or mixing prior to submission to any of the operations in ~~Section~~ **Annex IV.**A |  |  |
| **D14** | Repackaging prior to submission to any of the operations in Section A | Repackaging is a physical operation and should be considered as pretreatment | ~~Repackaging prior to submission to any of the operations in Section A~~ |  |  |
| **D15** | Storage pending any of the operations in Section A |  | Storage pending any of the operations in ~~Section~~ **Annex IV.**A |  |  |
| **General comments** | | | | | |
| *It might be convenient to change ‘Section A’ by ‘Annex IV.A) (and the same for Annex IV.B)* | | | | | |
| *It might be useful to add information/explication on the differences between the disposal operations (including final disposal and recovery). The glossary might be used as a reference to elaborate this information/explication.* | | | | | |
| *This list considers various operations which in fact are the same* | | | | | |
| *This list considers various operations which in fact are not final operations, as further steps are needed. This should be made clear, probably with a specific text.D8, D9, D10, D13 and D15 might explicitly point this out.* | | | | | |
| *This list considers various operations which in fact in no way are ESM. In maintaining these alternatives in the list someone, not being a specialist, might assume all alternatives are or might be ESM. Someone might feel invited to send his hazardous waste for one of those alternatives. This should be prevented. Thus, D1, D4, D6, D7, D11, D12 should be eliminated* | | | | | |

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| **A** | | **B** | **C** |
| **New D operation** | | **Rationale** | **General comments** |
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| **Overarching comments** |
| *Eventually include other thermal treatment operations, like pyrolysis and autoclave* |
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