

Waste Incineration BREF - draft 1

EURELECTRIC comments

September 2017

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We Stand For:

Carbon-neutral electricity by 2050

We have committed to making Europe's electricity cleaner. To deliver, we need to make use of **all low-carbon technologies**: more renewables, but also clean coal and gas, and nuclear. Efficient electric technologies in **transport and buildings**, combined with the development of smart grids and a major push in **energy efficiency** play a key role in reducing fossil fuel consumption and making our electricity more sustainable.

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We support well-functioning, distortion-free **energy and carbon markets** as the best way to produce electricity and reduce emissions cost-efficiently. Integrated EU-wide electricity and gas markets are also crucial to offer our customers the **full benefits of liberalisation**: they ensure the best use of generation resources, improve **security of supply**, allow full EU-wide competition, and increase **customer choice**.

Continent-wide electricity through a coherent European approach

Europe's energy and climate challenges can only be solved by **European – or even global – policies**, not incoherent national measures. Such policies should complement, not contradict each other: coherent and integrated approaches reduce costs. This will encourage **effective investment** to ensure a sustainable and reliable electricity supply for Europe's businesses and consumers.

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| Comments from | Origin of the comment | Comment # | Extent of the comment | Chapter No. / Section No. | Chapter title | Page # | Selected information subject to the comment | Major/Minor comment | Comment description | Proposal for modification | Rationale / supporting data |
|---------------|-----------------------|-----------|-----------------------|---------------------------|---------------|--------|--|---------------------|--|--|---|
| helene.lavray | | 1 | Selected Text | 5 | | 677 | which combust mixed municipal waste | Major | The term "mixed municipal waste" needs to be clarified and aligned with the scope of the BAT Conclusions for Large Combustion Plants | Change text: "which combust mixed municipal waste as defined in Article 3 (39) of Directive 2010/75/EU" | See scope of the LCP BREF |
| helene.lavray | | 2 | Selected Text | 5 | | 677 | These BAT conclusions do not address the following | Major | Include exemption from scope for disposal or recovery of waste in large combustion plants covered by the BREF LCP and the corresponding BAT conclusions for large combustion plants. | Add text: "Disposal or recovery of waste in large combustion plants which combust waste where 40 % or less of the resulting heat release comes from hazardous waste or which combust waste except mixed municipal waste as defined in Article 3(39) and except other waste listed in Article 42(2)(a)(i) and (ii) of Directive 2010/75/EU as this is covered by the BAT conclusions for large combustion plants." | In general, co-incineration of waste in large combustion plants with more than 50 MW of thermal rated capacity is covered by the BAT conclusions for large combustion plants of the BREF LCP. However, in some cases, the BAT conclusions for LCPs do not apply (e.g. for co-incineration plants combusting mixed municipal waste). To avoid duplication and loopholes a clear exemption from scope of plants covered exclusively by the BREF LCP should be included in the BREF WI. |
| helene.lavray | | 3 | Entire Chapter | 5 | | 677 | | Major | Derivation of BAT-AELs should focus on Key Environmental Indicators for the waste incineration sector. For other IED pollutants that are not considered to be KEI it is sufficient that the existing IED requirements continue to apply as safety network. According to the kick-off-meeting outcomes, pollutants not initially considered to be a priority in the context of this WI BREF review include among others HF, HCl, and CO. Results of the data collection confirm mostly the appropriateness of the existing ELVs of IED Annex VI for those pollutants. | Consider deleting the BAT-AELs concerning HF (BAT 28), HCl (BAT 28), and CO (BAT 29) for not being KEI in the context of the BREF waste incineration review. | See Kick-Off-Meeting charts regarding KEI. Remind that IED Annex VI sets an appropriate safety network including ELVs for the non-key environmental indicators such as HF, HCl and CO. See also Joint contribution from IED regulated industrial sectors on the criteria for identifying key environmental issues for the review of BREFs http://www.eurelectric.org/media/293203/20161017_final_joint_contribution_on_kei-2016-oth-0085-01-e.pdf |
| helene.lavray | | 4 | Entire Chapter | 5 | | 677 | | Major | In some cases the BAT conclusions include tailored BAT requirements for different waste types such as MSW/ONHW, sewage sludge and hazardous waste (e.g. in table 5.1). It is unclear which and to what extent requirement(s) shall apply when several types of wastes are used. | Include clarification on the application of BAT conclusions in the case of different waste types being incinerated. | Many waste incinerators can be classified according to the predominant waste type used (e.g MSW, SS, HW etc.). However, many plants are using smaller fractions of other waste types in combination with the main waste type or a predominant waste type cannot be identified. |
| helene.lavray | | 5 | Entire Chapter | 5 | | 677 | | Major | For reasons of consistency with the IED, all BAT-AELs should be expressed as daily averages only. In cases of waste co-incineration where the IED mixing rule applies, the mixing rule should be applied only for daily averaging periods using the corresponding relevant daily values based on the BREF conclusions for Waste incineration and from the BREF LCP, if applicable, or from the IED Annex, if necessary. The application of the mixing rule shall not be based on BAT-AELs for differing averaging periods. | Express all BAT-AELs and indicative emission levels for air emissions as daily averages as far as continuous measurement applies. Do not include BAT-AELs or indicative emission levels based on longterm (yearly, monthly) or short-term (hourly, half-hourly) average. Clarify that in case of co-incineration where the mixing rule applies, only emission values based on the available BREF conclusions or the IED expressed as daily averages shall be used. | See Kick-Off-Meeting. Consistency with the IED Annex VI that sets an appropriate framework for compliance assessment and ELVs based on daily averages. |

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| helene.lavray | | 6 | Entire Chapter | 5 | | | | | | | | | | 677 | | Major | To enable compliance assessment, all BAT-AELs (and in particular the lower ranges) must take into account the applicable measurement uncertainty to allow for monitoring and compliance assessment. All values shall be based on the collected reference plant data without abstraction of measurement uncertainty. All BAT-AELs should be assessed in line with the JRC report on uncertainty management. | Check lower and upper ranges of BAT-AELs against the relevant measurement uncertainty and raise levels accordingly if necessary for compliance assessment. | See JRC draft report and corresponding Eurelectric comments. |
| helene.lavray | | 7 | Selected Text | 5 | | | | | | | | | | 678 | Definitions | Major | Include definition for "wood waste" (WW) | Add definition: Woody biomass which may contain halogenated organic compounds or heavy metals as a result of treatment with wood preservatives or coating and which includes, in particular, such wood waste originating from construction and demolition waste (see Article 3 (31)b of Directive 2010/75/EU) | A definition of "wood waste" is needed to enable, where appropriate, the setting of wood waste specific BAT requirements throughout chapter 5. |
| helene.lavray | | 8 | Selected Text | 5 | | | | | | | | | | 678 | Definitions | Major | Include definition for "Start-up and shut-down period" | Add definition: The time period of plant operation as determined pursuant to the provisions of Commission Implementing Decision 2012/249/EU of 7 May 2012, concerning the determination of start-up and shut-down periods for the purposes of Directive 2010/75/EU of the European Parliament and the Council on industrial emissions. | A concise and clear definition of SUSD is needed for BAT 6 in particular. See definition of SUSD in BREF LCP / BAT Conclusions. |
| helene.lavray | | 9 | Selected Text | 5 | | | | | | | | | | 678 | Definitions | Major | Include definition for "Valid (half-hourly average)" | A half-hourly average is considered valid when there is no maintenance or malfunction of the automated measuring system. | A concise and clear definition of "valid" half-hourly average is needed for BAT-AEL monitoring. See definition of "Valid (hourly average)" in the BREF LCP / BAT Conclusions from 2017 |
| helene.lavray | | 10 | Selected Text | 5 | | | | | | | | | | 681 | Average value over a sampling period of 2 to 4 weeks | Major | General considerations (table averaging periods): Allow for longer periods for "long-term sampling averages". | Change text in table for long-term sampling averages: "Average value over a sampling period of at least 2 weeks." | "Long-term sampling average" is defined as "Average value over a sampling period of 2 to 4 weeks". The used periods for PCDD/F samplings are remarkable longer (e.g. up to 8 weeks). |
| helene.lavray | | 11 | Selected Text | 5 | | | | | | | | | | 681 | (1) For any parameter where, due to sampling or analytical limitations, a 30-minute measurement is inappropriate, a more suitable sampling period may be employed. For PCDD/F and dioxin-like PCBs, one sampling period of 6 to 8 hours is used in the case of short-term sampling. | Major | Modify footnote 1 of the table concerning averaging periods to allow for one longer measurement instead of 3 shorter ones. | Modify footnote 1: "For any parameter where, due to sampling or analytical limitations, three consecutive 30-minute measurements are inappropriate, a more suitable sampling period may be employed. For PCDD/F and dioxin-like PCBs, one sampling period of 6 to 8 hours is used in the case of short-term sampling" | "Average over the sampling period" demands three consecutive measurements, which is not justified e.g. for metal analysis. One longer measurement instead of 3 shorter should be allowed also. |
| helene.lavray | | 12 | Selected Text | 5 | | | | | | | | | | 682 | Acronyms | Major | Add I-TEQ and WHO-TEQ to list of acronyms | The list of acronyms should include the terms I-TEQ and WHO-TEQ aiming at clarifying the respective versions of TEQ. | The determination of PCDD/F and PCB emissions should be based either in accordance with IED Annex VI part 2 on I-TEQ-factors and methodology first published in 1988 or on the WHO-TEQ-factors and methodology published in 2005. |

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| helene.lavray | | 13 | Selected Text | 5 | | | | | | | | 682 | When waste is co-incinerated together with non-waste fuels, the BAT-AELs for emissions to air | Major | The D1 does not take into account the current requirements of the IED for co-incineration. For plants co-incinerating waste the mixing formula of Annex IV of the IED is applicable in certain cases. | Change text: "When waste is co-incinerated together with non-waste fuels, the BAT-AELs for emissions to air given in these BAT conclusions apply to the entire flue-gas volume generated, except in cases where the mixing rule formula of Annex VI (part 4) to Directive 2010/75/EU is applicable for the pollutant in question. In those cases, the BAT-AELs for emissions to air given in these BAT conclusions apply only to the entire flue-gas volume generated from the waste." | For reasons of consistency and proportionality, the special provisions concerning certain pollutants for combustion plants co-incinerating waste contained in Annex VI (part 4) to Directive 2010/75/EU and hereby in particular the mixing rule formula need to be respected. |
| helene.lavray | | 14 | Selected Text | 5 | | | | | | | | 682 | The BAT-AELs for emissions to water apply at the point where the emission leaves the installation | Major | General considerations: Clarify that emission levels for emissions to water refer to direct discharges to receiving water bodies. | The BAT-AELs for emissions to water refer to direct discharges to a receiving water body and apply at the point where the emission leaves the installation. | See analogous provision in the BREF LCP BAT Conclusion Chapter. |
| helene.lavray | | 15 | Selected Text | 5 | | | | | | | | 682 | Destruction efficiency | Major | The definition of the destruction efficiency for POPs should be deleted. | Delete definition of "destruction efficiency". | Related to deletion of BAT 9. The analytical determination of the destruction efficiency based on various randomly taken periodic measurements in waste, slag/bottom ash, residues and flue gas are not enabling the plant operator to determine a scientifically sound and practically relevant and reproducible destruction efficiency in light of the great variety of waste charges (with and without POPs) and time delays between the different samplings. Also, it is not defined if mass is calculated as toxicity equivalents. There is a need to set common and sufficiently robust methodology for a sampling and calculations. |
| helene.lavray | | 16 | Selected Text | 5 | | | | | | | | 682 | The BAT-AELs refer to daily averages, i.e. 24-hour flow-proportional composite samples | Major | General considerations: Clarify that other methods than the 24-hour-flowproportional composite samples may be used. | BAT-AEL for emissions to water: "The BAT-AELs refer to daily averages, i.e. 24-hour flow-proportional composite samples, or alternative on 4 of 5 measuring method. A Time-proportional composite sampling can also be used alternatively provided that sufficient flow stability is demonstrated" | The flow-proportional collection process is technically complex and is still subject to faults in operation. Since there is no better results compared to the spot (random) sample procedure, for economic reasons the exemplary specification in BREF WI should be omitted. In addition, this method is an integral feature, which leads to the qualitative devaluation of other suitable measuring methods. The "time-proportional composite sampling" enables to reduce the effort. |

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| helene.lavray | | 17 | Selected Text | 5 | 1 | 1 | | | | | | | 684 | Specifically for incineration plants and, where relevant, bottom ash treatment plants, BAT is | Major | BAT 1 - EMS features not relevant for all plants | Modify text as follows: "Specifically for incineration plants and, where relevant, bottom ash treatment plants, BAT is to also incorporate one or a combination of the following features in the EMS: " | With the specific requirements for the environmental management system, BREF WI is now calling for numerous concepts / plans with specific specifications that are rarely found in practise with these specifications. It is customary to work with specific requirements and instructions tailored to the company's requirements. In many cases, they differ from this differentiated presentation. It is now mistaken to see that such a differentiated approach with such management plans is described as common. The features of an EMS identified specifically for incineration plants should not be generally applicable in all cases. It should be up to operators and authorities to select the required features on a case-by-case basis. |
| helene.lavray | | 18 | Selected Text | 5 | 1 | 1 | | | | | | | 684 | BAT 2 | Major | BAT 2 - include applicability restriction for accident management plan | Include applicability restriction: "Applicability: Only applicable for plants subject to Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances and for plants treating or incinerating predominantly hazardous wastes or for other plants where relevant accident hazards involving dangerous substances are expected and/or have been substantiated." | Accident management plans should not be generally applicable for all installations. The accident management plan should only apply if larger quantities of hazardous waste are used in the waste incineration plant. |
| helene.lavray | | 19 | Selected Text | 5 | 1 | 2 | | | | | | | 685 | BAT 3. | Major | BAT 3: Establish appropriate provisions for combined heat and power plants regarding energy efficiency. | Replace footnote 1 to BAT 3 as follows: "In the case of combined heat and power (CHP) plants, only one of the two BAT-AEELs applies: either 'gross electrical efficiency' or 'gross total heat efficiency', depending on the CHP unit design (i.e. either more oriented towards electricity generation or towards heat generation). For CHP plants: • the gross total heat efficiency BAT-AEEL refers to the combustion unit operated at full load and tuned to maximise primarily the heat supply and secondarily the remaining power that can be generated; • the gross electrical efficiency BAT-AEEL refers to the combustion unit generating only electricity at full load." | Align provisions for CHP plants with BAT Conclusions for LCPs. In light of the great differences in operational designs and functionalities of CHP plants, allow for selecting the more appropriate approach for assessing energy efficiency performance of the CHP plant in question: Either determination of gross electrical efficiency or of gross total heat efficiency. |
| helene.lavray | | 20 | Selected Text | 5 | 1 | 2 | | | | | | | 685 | BAT 3. | Major | BAT 3 - Include derogation for performance test at CHP plants | Include further footnote (2): In the case of CHP units, if for technical reasons the performance test cannot be carried out with the unit operated at full load for the heat supply, the test can be supplemented or substituted by a calculation using full load parameters. | See analogous footnote in BREF LCP Bat Conclusion Chapter (BAT 2) applicable for CHP units. |
| helene.lavray | | 21 | Selected Text | 5 | 1 | 2 | | | | | | | 685 | BAT 4 | Major | BAT 4: Flow measurement at stack through CEMs don't seem necessary, specifically in case of co-incineration it's not required by LCP BREF. | Monitoring: Periodic or continuous determination | Flue-gas flow could be monitored effectively by stoichiometric calculation using periodic analysis of fuel. |

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| helene.lavray | | 22 | Selected Text | 5 | 1 | 2 | | | | | | | 686 | BAT 5 | Major | BAT 5 - Include applicability restriction for minimum monitoring frequency | Include general footnote regarding minimum monitoring frequency: "The monitoring frequency does not apply where plant operation would be for the sole purpose of performing an emission measurement." | Waste incinerator lines may eventually not operated over the full course of a year (e.g. due to maintenance or repair). Quarterly or monthly emission monitoring should not lead to additional emissions from start-up, shut-down etc. See analogous footnote in BREF LCP Bat Conclusion Chapter (BAT 4) |
| helene.lavray | | 23 | Selected Text | 5 | 1 | 2 | | | | | | | 686 | NH3 | Major | BAT 5 - Allow for exemption from continuous measurement for NH3 in small plants. | Include footnote for NH3: In the case of use of SCR, the minimum monitoring frequency may be at least once every year, if the emission levels are proven to be sufficiently stable. | Ammonia emissions are usually not waste-specific, but technology specific (ammonia slip when applying SCR/SNCR). For waste incinerators, the same applicability restrictions and derogations for NH3 should apply as for LCPs of comparable size. See analogous footnote in BREF LCP Bat Conclusion Chapter (BAT 4) |
| helene.lavray | | 24 | Selected Text | 5 | 1 | 2 | | | | | | | 686 | SO2 | Major | BAT 5 - Allow for exemption from continuous measurement for SO2 in certain cases. | Include footnote for SO2: "The continuous measurements for SO2 may be replaced by periodic measurements with a minimum frequency of once every year if the operator can prove that the emissions of those pollutants can under no circumstances be higher than the prescribed emission limit values." | Only authorized and regulary checked wastes may be used in a WtE Plant. The waste is incinerated under stable operating conditions. Reduce administrative cost and avoid unnecessary administrative burden. See also analogous exemption in IED Annex VI part 2.5 |
| helene.lavray | | 25 | Selected Text | 5 | 1 | 2 | | | | | | | 686 | HCl | Major | BAT 5: Continous measurement of HCl should be an option (as for HF) in cases where emission levels are proven to be stable. | Minimum monitoring frequency for HCl and HF: insert note (2) reference: "(2) The continuous measurement of HF and HCl may be replaced by periodic measurements if the emission levels are proven to be sufficiently stable. Periodic measurements may be carried out each time that a change of the fuel and/or waste characteristics may have an impact on the emissions, but in any case at least once every six months. No EN standard is available for the periodic measurement of HF." | CEMs is not useful in case af low and stable emission levels, considering measurement LOD, uncertainty and no additional information provided. The proposal is consistent with an equivalent footnote in the LCP BREF for plants co-incinerating waste (LCP BREF - BAT 4, footnote 13). |
| helene.lavray | | 26 | Selected Text | 5 | 1 | 2 | | | | | | | 686 | HF | Major | BAT 5: Continous measurement of HF should be an option (as for HCl) in cases where emission levels are proven to be stable. | Minimum monitoring frequency for HCl and HF: insert note (2) reference: "(2) The continuous measurement of HF and HCl may be replaced by periodic measurements if the emission levels are proven to be sufficiently stable. Periodic measurements may be carried out each time that a change of the fuel and/or waste characteristics may have an impact on the emissions, but in any case at least once every six months. No EN standard is available for the periodic measurement of HF." | CEMs is not useful in case af low and stable emission levels, considering measurement LOD, uncertainty and no additional information provided. The proposal is consistent with an equivalent footnote in the LCP BREF for plants co-incinerating waste (LCP BREF - BAT 4, footnote 13). |
| helene.lavray | | 27 | Selected Text | 5 | 1 | 2 | | | | | | | 686 | Dioxin-like PCBs | Major | BAT 5: Restrict minimum monitoring frequency to cases when a BAT-AEL is actually set based on WHO-TEQ-methodology. | Modify Minimum monitoring frequency: "Once every month if ELV is set based on WHO-TEQ methodology". | The requirement to monitor dioxin-like PCBs should be restricted in line with applied BAT-AELs. |

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| helene.lavray | | 28 | Selected Text | 5 | 1 | 2 | | | | | | | 686 | Hg | Major | BAT 5 - allow explicitly for the use of continuous sampling methods | BAT 5: Add footnote to continuous measurement of Hg which reads: "Continuous sampling combined with frequent analysis of time-integrated samples, e.g. by a standardised sorbent trap monitoring method, may be used as an alternative to continuous measurements upon request by the operator." | Continuous sampling represents a viable alternative method to fulfill obligations for continuous measurement of Hg in an efficient way from environmental, economical and technical perspective. |
| helene.lavray | | 29 | Selected Text | 5 | 1 | 2 | | | | | | | 686 | Dioxin-like PCBs | Major | BAT 5: Reduce monitoring frequency in certain cases | BAT 5: Add footnotes to once every month measurement frequency of PCDD/F and Dioxin-like PCBs which reads: "If the emission levels are proven to be sufficiently stable, periodic measurements may be carried out each time that a change of the fuel and/or waste characteristics may have an impact on the emissions, but in any case at least once every six months." | Once every month measurement frequency of PCDD/F is economically unfeasible in cases where emission levels are proven to be sufficiently stable and well below the BAT-AELs. |
| helene.lavray | | 30 | Selected Text | 5 | 1 | 2 | | | | | | | 686 | N2O | Major | BAT 5: Delete monitoring requirement for N2O | BAT 5: Delete row concerning N2O. If not deleted, change "standard" to: Generic EN standards or EN 21258. | Information on N2O emissions are not commonly available. No information concerning N2O emissions was gathered via the questionnaire on BAT reference plants, and, hence, no BAT-AEL has been derived. In the absence of specific provisions and BAT technologies to reduce N2O emissions, the monitoring requirement for N2O should be removed to reduce administrative and monitoring cost. If monitoring requirement is not deleted, change entry in "standards column: There is given the specific standard to measure parameter (periodically). N2O could also easily be measured by same AMS device (e.g. FTIR) as many other parameters and thus periodic measurements may not be needed in all cases. |
| helene.lavray | | 31 | Selected Text | 5 | 1 | 2 | | | | | | | 686 | Metals and metalloids except mercury (As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Sb, Ti, V) | Major | BAT 5 - Allow for reduction of monitoring frequency for metals and metalloids. | BAT 5 - Include new footnote for metals and metalloids: "The bi-annual sampling of metals and metalloids except mercury can be replaced by a monitoring frequency of once every year in the case that the operator can prove on the basis of information on the quality of the waste concerned and the monitoring of the emissions that the emissions are under all circumstances significantly below the emission limit values for heavy metals." | Reduce administrative cost and avoid unnecessary administrative burden. See also analogous exemption in IED Annex VI part 2.6 |

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| helene.lavray | | 32 | Selected Text | 5 | 1 | 2 | | | | | | | | 686 | Hg | Major | BAT 5 - allow for further exemptions from continuous monitoring of Hg emissions for small emitters | Adapt and extend footnote 3 concerning Hg: "For incineration plants with a capacity of < 100.000 tonnes/year incinerating predominantly non-hazardous waste, and for plants incinerating wastes with intrinsically low and stable mercury content (e.g. sewage sludge, mono-streams of waste of controlled composition), and for plants proving that mercury emission levels are significantly lower than the applicable limit value and predominantly close to the lower end of the applicable BAT-AEL (5 µg/m³), the continuous monitoring of emissions can be replaced by long-term sampling or periodic monitoring with a minimum frequency of once every six months. In the latter case the relevant standard is EN 13211." | Only authorized and regulary checked wastes may be used in a WtE Plant. The waste is incinerated under stable operating conditions. BAT 5 should allow for an exemption from continuous monitoring of Hg emissions for small emitters to avoid the disproportionately high installation and monitoring cost for continuous measurement of mercury emissions. |
| helene.lavray | | 33 | Selected Text | 5 | 1 | 2 | | | | | | | | 686 | PCDD/F | Major | BAT 5: Enable application of footnotes 4 and 5 for plants using small amounts of hazardous waste | In footnotes 4 and 5, the term "exclusively non-hazardous waste" should be replaced with "predominantly non-hazardous waste" | Many MSW, SS and other Non-HW incinerators co-incinerate smaller fractions of hazardous waste. In light of the discontinuous incineration of smaller quantities of HW in such installations, a monthly monitoring frequency is not necessary. The possibility to reduce the monitoring frequency should be enabled for incinerators using only smaller quantities of HW. |
| helene.lavray | | 34 | Selected Text | 5 | 1 | 2 | | | | | | | | 686 | Dioxin-like PCBs | Major | BAT 5: Enable application of footnotes 4 and 5 for plants using small amounts of hazardous waste | In footnotes 4 and 5, the term "exclusively non-hazardous waste" should be replaced with "predominantly non-hazardous waste" | Many MSW, SS and other Non-HW incinerators co-incinerate smaller fractions of hazardous waste. In light of the discontinuous incineration of smaller quantities of HW in such installations, a monthly monitoring frequency is not necessary. The possibility to reduce the monitoring frequency should be enabled for incinerators using only smaller quantities of HW. |
| helene.lavray | | 35 | Selected Text | 5 | 1 | 2 | | | | | | | | 686 | Benzo[a]pyrene | Major | BAT 5: Delete monitoring requirement for Benzo(a)pyrene. | BAT 5: Delete row concerning N2O. If not deleted, change "standard" to: Generic EN standards or EN 21258. | No individual BAT-AEL is set for Benzo(a)pyrene and there is no EN Standard available. Hence, delete requirement for individual measurement of this pollutant. |

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| helene.lavray | | 36 | Selected Text | 5 | 1 | 2 | | | | | | | | 687 | The monitoring can be carried out by direct emission measurements or by monitoring of | Major | BAT 6 - OTHNOC: Restrict applicability of BAT 6 to continuously measured air pollutants according to BAT 5. | Change text: "The monitoring of air emissions of pollutants continuously measured in accordance with BAT 5 can be carried out by direct emission measurements or by monitoring of surrogate parameters if this proves to be of equivalent or better scientific quality than direct emission measurements. " | This BAT does not apply to (or represent) the operational practise and monitoring procedures . It should be made clear that: 1. the emissions of a WI-plant is monitored often in EOT - from the start-up to shut-down. 2. Compliance with prescribed limit values of IED shall only be demonstrated during the waste incineration incl. start-up and shut-down with waste on the grate/in the combustion chamber Water emissions from FGC and bottom ashtreatment are not subject of start-up and shut-down considerations regarding the waste incinerator. The monitoring should focus on continuously monitored pollutants. |
| helene.lavray | | 37 | Selected Text | 5 | 1 | 2 | | | | | | | | 687 | Emissions during start-up and shutdown while no waste is being incinerated | Major | BAT 6 - OTHNOC: Restrict applicability of BAT 6 to incineration of waste. | Delete sentence: "Emissions during start-up and shutdown while no waste is being incinerated..." or rewrite: "Emissions during start-up and shutdown while no waste is being incinerated are not a common part of the monitoring. They may be estimated based on at least one measurement campaign per year carried out during a planned start-up/shutdown operation." | The BREF WI should focus on the incineration of waste. If the sentence is not deleted, the applicability should be limited to waste incinerators and not be applicable for plants co-incinerating wastes as for those plants start-up and shut-down provisions should be closely aligned with the BAT conclusions for BREF LCP. |
| helene.lavray | | 38 | Selected Text | 5 | 1 | 2 | | | | | | | | 687 | Total organic carbon (TOC) | Major | BAT 7 - Limit TOC measurement to bottom ash treatment | Delete reference to FGC, require measurement of TOC only for bottom ash treatment (proposal related to proposal for BAT 34 to limit applicability of TOC BAT-AEL to bottom ash treatment). | Consistency with IED Annex VI. TOC measurement is not required for waste water from flue gas cleaning (FGC). |
| helene.lavray | | 39 | Selected Text | 5 | 1 | 2 | | | | | | | | 687 | Once every month | Major | BAT 7 - clarify that minimum monitoring frequency of once every month is only applicable for direct discharges to receiving water bodies | BAT-AELs should only be applicable for direct discharges to receiving water bodies. Include footnote to minimum monitoring frequency of "once every month": "Monitoring frequency of once every months only applicable for direct discharges to receiving water bodies. As an alternative, the '4 out of 5 method' may be used." | Reduce administrative cost for monitoring of water emissions in cases where the waste water is transferred to an external waste water treatment plants or other not direct discharges to a receiving water body. The monitoring requirements should allow for other well established detection methods already introduced in the EU, in particular the '4 out of 5 method'. |
| helene.lavray | | 40 | Selected Text | 5 | 1 | 2 | | | | | | | | 687 | BAT 7 | Major | BAT 7: Reconsider which metals to monitor in relation to the metals listed in Table 5.8 to BAT34. | BAT 7: Require monitoring of metals only for metals listed in Table 5.8 to BAT 34. | Mn and Sb is not in BAT7 while Mo is included. Mn and Sb are included in the metals in table 5.4 on BAT-AEL while Mo is not. Monitoring of metal emissions should only be required for metals with BAT-AEL requirements in line with Table 5.8 of BAT 34. |

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| helene.lavray | | 41 | Selected Text | 5 | 1 | 2 | | | | | | | 687 | BAT 7. | Major | BAT 7: Respect the limitations of proposed standards | BAT 7: Introduce a general footnote to the table indicating that the standards has limits. When used outside the limits of application, the results should be interpreted with caution. | The methods described in standard has limitations and interferences might result in incorrect results. Especially for suspended solids. The filtering normally is complete within less than 1 minute. However, some types of waters contain materials that block the filter pores or reduce their width (eg salts). This increases the filtering time and the results can be a function of the sample volume. If such blocking of the filter is observed, the determination should be repeated with smaller volumes. The results should be interpreted with caution. |
| helene.lavray | | 42 | Selected Text | 5 | 1 | 2 | | | | | | | 688 | BAT 9. | Major | BAT 9: Delete BAT 9 concerning the incineration of hazardous waste containing POPs. | Delete BAT 9 | Section BAT 9 regarding the determination of the POP destruction efficiency is not based on established practices and should be deleted. It is not demonstrated that measuring of input and output of POPs in the media demanded (waste, slags, bottom ash, fly ash, other residues, waste water and flue gas) is a feasible, available, and established technique to determine a meaningful and representative destruction efficiency of POPs in plants. No example of a plant using such technique is presented. To our understanding is it not possible to determine the destruction efficiency of a specific POP in a plant where the "POP-waste", with concentrations exceeding values in annex IV of the EU POP-regulation, only is a fraction of the total waste input. The bulk of incinerated waste consist of a large number of inhomogeneous wastes with low average concentrations of commonly occurring POPs (for example dioxins and furans in most |
| helene.lavray | | 43 | Selected Text | 5 | 1 | 2 | | | | | | | 688 | BAT 8.BAT is to monitor the total organic carbon content of bottom ashes/slugs and/or their loss on ignition in accordance with EN 13137 and/or EN 15169. The minimum monitoring frequency is once every three months. | Major | BAT 8: Change wording to "or" instead of "and/or". | BAT 8: Modify text: "BAT is to monitor the total organic carbon content of bottom ashes/slugs or their loss on ignition in accordance with EN 13137 or EN 15169 (...)" | BAT conclusions should be clearly and precisely formulated. Avoid ambiguous expressions such as "and/or". Here, it is sufficient to conduct one of the two options, either monitoring TOC of bottom ashes and slags or monitoring of LOI. A provision should be inserted allowing for an extension of the minimum monitoring frequency if the measured levels are proven to be sufficiently table. |

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| helene.lavray | | 44 | Selected Text | 5 | 1 | 3 | | | | | | | | 688 | BAT 10. In order to improve the overall environmental performance of the incineration plant, as part of the waste stream management plan (see BAT 1), BAT is to use all of the techniques (a) to (d) given below, and, where relevant, also techniques (e) and (f). | Major | BAT 10 would, in its current formulation, require a waste-stream-based management system that is not introduced in common practice, but which must always be adapted to the specific requirements of the operation. This has to be considered in the BAT 10. It is up to the operator to decide to what extent management plans are actually applied. | BAT 10. In order to improve the overall environmental performance of the incineration plant, as part of the waste stream management plan (see BAT 1), BAT is to use one or an appropriate combination of the techniques (a) to (f) | The waste-stream-based management system has closely to be adjusted considering the waste input characteristics and the local requirements. |
| helene.lavray | | 45 | Selected Text | 5 | 1 | 2 | | | | | | | | 688 | BAT 8. BAT is to monitor the total organic carbon content of bottom ashes/slugs and/or their loss on ignition in accordance with EN 13137 and/or EN 15169. The minimum monitoring frequency is once every three months | Major | BAT 8 - reduce monitoring frequency for TOC and LOI of bottom ashes/slugs | BAT 8: "(...) The minimum monitoring frequency is once every year." | The introduction of a measuring interval of 3 months obviously aims at improving knowledge about pollutant emissions from a statistical point of view. However, from the operator's perspective, they are causing significant additional administrative burden without improving plant performance. To reduce administrative cost, the minimum monitoring frequency should be changed from "once every three months" to "once every year". It should also be clarified that monitoring requirements refer to either TOC or LOI as alternative options. |
| helene.lavray | | 46 | Selected Text | 5 | 1 | 3 | | | | | | | | 690 | Visual inspection | Major | BAT 12 - delete requirement of visual inspection for sewage sludge | Line "Sewage sludge": delete "visual inspection" or restrict applicability. | Visual inspection of sewage sludge is usually not applicable in cases where the sewage sludge is directly discharged or pumped from the enclosed transport container into the storage deposit. |
| helene.lavray | | 47 | Selected Text | 5 | 1 | 3 | | | | | | | | 690 | In order to improve the overall environmental performance, BAT is to monitor the waste deliveries as part of the waste acceptance procedures (see BAT 10) including the elements given below | Major | BAT 12 - do not require all features of waste monitoring in all cases | Rewrite introduction to BAT 12: "In order to improve the overall environmental performance, BAT is to monitor the waste deliveries as part of the waste acceptance procedure (see BAT 10) using an appropriate combination of the elements given below for particular waste fractions." | The required features of waste monitoring should not be generally applicable in all cases, but should follow a risk-based approach. It should be up to operators and authorities to select the required features on a case-by-case basis. For some wastes such as certain hazardous waste the "visual inspection" and "unpacking and visual inspection" is not feasible to protect the employees. Some of the hazardous waste streams are very toxic and therefore stored in closed drums/containers |
| helene.lavray | | 48 | Selected Text | 5 | 1 | 3 | | | | | | | | 690 | Radioactivity detection | Major | BAT 12: Do not require radioactivity detection for non-hazardous waste | Delete "radioactivity detection" in line 2 of table to BAT 12. | Radioactivity detection is not necessary for MSW or other non-hazardous waste. Monitoring would require to implement a measurement system without significant benefits. |

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| helene.lavray | | 49 | Selected Text | 5 | 1 | 3 | | | | | | 690 | BAT 12 | Major | BAT 12 - Include tailored requirements for wood waste analogously to MSW. | Include additional row for wood waste in table to BAT 12: Waste type: "wood waste"; Monitoring: "• Weighing of the waste deliveries • Visual inspection • Periodic sampling of key properties/substances for different types of wood waste fractions (e.g. calorific value, content of halogens and metals/metalloids)" | For wood waste including hazardous wood waste fractions tailored requirements for the monitoring of waste deliveries as part of the waste acceptance procedures should be established. Wood waste deliveries are commonly classified into different wood waste fractions of typical characteristics and corresponding acceptance criteria. Detailed analysis of each individual waste delivery is not required. |
| helene.lavray | | 50 | Selected Text | 5 | 1 | 3 | | | | | | 690 | BAT 12 | Major | BAT 12 - include tailored requirements for hazardous waste fractions used in MSW and other Non-hazardous waste incinerators | Include footnote for "hazardous waste": "For hazardous waste fraction fractions stemming from municipal solid waste or comparable commercial waste of controlled composition delivered to plants incinerating predominantly non-hazardous waste the applicable monitoring is the one for municipal solid waste" | Reduce administrative cost for hazardous waste fractions co-incinerated in MSW or other non-HW incinerators. |
| helene.lavray | | 51 | Selected Text | 5 | 1 | 3 | | | | | | 690 | Municipal solid waste and other non-hazardous waste | Major | BAT 12 - do not require periodic sampling of individual deliveries for MSW and other non-hazardous waste in all cases | Monitoring of MSW and other non-hazardous waste: Periodic sampling of individual deliveries or bulk samples and analysis of key properties/substances | It is unreasonable to monitor individual waste deliveries in all cases; calorific value could be monitored from bulk samples gathered from deliveries from a single supplier or via heat balance of the unit. Halogens and metals/metalloids could be monitored from bulk samples gathered during long period. |
| helene.lavray | | 52 | Selected Text | 5 | 1 | 3 | | | | | | 691 | BAT 13. In order to reduce the environmental risks associated with the reception, handling and storage of waste, BAT is to use both of the techniques given below | Major | BAT 13: allow for the application of different techniques. | Reword introductory sentence: "BAT 13. In order to reduce the environmental risks associated with the reception, handling and storage of waste, BAT is to use one or an appropriate combination of the techniques given below." Split BAT 13a in two techniques: 'impermeable surfaces' and 'segregated drainage'. | Depending on the waste to be used, specific measures are used to isolate possible environmental risks. Therefore, the reference to the table describing the techniques should not be exhaustive or prescriptive, but rather describe different techniques of exemplary character. The technique BAT 13a should be split in two techniques: 'impermeable surfaces' and 'segregated drainage'. The application of segregated drainage is not common practice in waste storage bunkers. Instead of applying segregated drainage, a possible drainage could also be connected to a common drainage system, because drainage is closed during normal operation and used only during maintenance or in other specific |

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| helene.lavray | | 53 | Selected Text | 5 | 1 | 3 | | | | | | 692 | BAT 16.In order to improve the overall environmental performance of the incineration plant and to reduce emissions to air, BAT is to set up and implement procedures for the adjustment of the plant's settings, e.g. though the advanced control system (see description in Section 5.2.1), as and when needed and practicable, based on the characterisation and control of the input waste (see BAT 12). | Major | BAT 16: Delete BAT 16 | Delete BAT 16 | BAT 16 basically describes mechanisms which have been introduced in principle. Since this generic requirement does not permit any further clarification due to the different waste used, the installed boiler and flue gas cleaning technology as well as the existing control technology, this BAT should be deleted. Otherwise, plant operators face could face considerable discussions with authorities during subsequent implementation, but without actually being able to achieve improvements. |
| helene.lavray | | 54 | Selected Text | 5 | 1 | 3 | | | | | | 692 | BAT 17.In order to improve the overall environmental performance of the incineration plant, BAT is to set up and implement operational procedures (e.g. organisation of the supply chain, continuous rather than batch operation, preventive maintenance) to limit as far as practicable shutdown and start-up operations. | Major | BAT 17: Delete BAT 17 | Delete BAT 17 | BAT 17 is not necessary and it is unclear how it would be implemented. The BAT should be removed. In principle, operational procedures are already covered by BAT 1 and other BAT conclusions. |
| helene.lavray | | 55 | Selected Text | 5 | 1 | 3 | | | | | | 692 | identification of potential OTNOC, of their root causes (e.g. failure of emission abatement systems, including identification of equipment critical to the protection of the environment ('critical equipment')) and of their potential consequences, and regular review and update of the list of identified OTNOC following the periodic assessment below:appropriate design of critical equipment (e.g. compartmentalisation of the bag filter, supplementary burners to heat up the flue-gas and obviate the need to bypass the bag filter on start-up, etc.);set-up and implementation of a preventive maintenance plan for critical equipment;monitoring and recording of | Major | BAT 19 - Merge with BAT 6 concerning OTNOC | Merge BAT 6 and 19 into one BAT. | BAT 6 and 19 both target OTNOCs. |
| helene.lavray | | 56 | Selected Text | 5 | 1 | 3 | | | | | | 692 | supplementary burners to heat up the flue-gas and obviate the need to bypass the bag filter on start-up | Major | BAT 19: restrict general applicability of supplementary burners | Include restriction of applicability to new plants: "in case of new plants supplementary burners to heat up the flue-gas and obviate the need to bypass the bag filter on start-up" | It is not possible to fulfill this condition in existing plants which were designed with bypass to deal with dangerous operational situations (for example in cases of unintended pressure increases) |

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| helene.lavray | | 57 | Selected Text | 5 | 1 | 4 | | | | | | | 693 | oxygen-enriched combustion air. | Major | BAT 21b: Delete the oxygen enrichment example in the description. | BAT 21b: Delete the oxygen enrichment example in the description. Restrict Applicability of BAT 21b to new plants. | From a system perspective, enriching combustion air with oxygen consumes more energy than gained through the reduction of flue gas. This measure should not be considered to be a BAT measure for increasing energy efficiency. The examples listed in BAT 21 b cannot be considered to be generally applicable for existing plants because the measures cannot be implemented without major changes to the plant and/or can cause excessive costs. Hence, applicability of BAT 21 b should be limited to new plants. That could not be a general BAT for existing plants. |
| helene.lavray | | 58 | Selected Text | 5 | 1 | 4 | | | | | | | 693 | In the case of plants dedicated to the incineration of hazardous waste, the applicability may be limited by | Major | BAT 20: Extend limitation of applicability to all waste types. | Extend limitation of applicability to all waste types: "Applicability: [...] The Applicability may be limited by..." | Applicability is not limited to hazardous waste. MSW, SS and other non-HW may also contain corrosive substances such as chlorine in the flue gas or have physical fly ash properties comparable to hazardous waste incinerators. |
| helene.lavray | | 59 | Selected Text | 5 | 1 | 4 | | | | | | | 693 | Applicable within the constraints associated with the availability of low-grade heat | Major | BAT 21 a. Thermal drying of sewage sludge: Extend applicability restriction | Applicable within the constraints associated with the availability of low-grade heat and the required combustion conditions with a view to maintaining an optimal performance of the boiler. | The applicability may be limited by insufficient recoverable heat from the process, by the required combustion conditions, or by the waste moisture content. |
| helene.lavray | | 60 | Selected Text | 5 | 1 | 4 | | | | | | | 693 | Applicable to new plants and to major retrofits of existing plants | Major | BAT 21 d: limit optimisation of the boiler design to new plants | Delete applicability to existing plants: "Applicable to new plants." | The definition of new plants (see page 678) includes complete replacements of a plant. In addition, the term "major retrofits" can not be precisely defined. BAT 21 d should not be applicable for "major retrofits of existing plants" |
| helene.lavray | | 61 | Selected Text | 5 | 1 | 4 | | | | | | | 694 | Applicable within the constraints associated with the local heat and power demand | Major | BAT 21g: Modify applicability restriction. | BAT 21g: Change applicability restriction to "Applicable within the constraints associated with the local heat and power demand as well as the availability of distribution networks for power, heat and cooling." | The applicability of BAT 21g also depends on the availability of district heating and district cooling networks. |

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| helene.lavray | | 62 | Selected Text | 5 | 1 | 4 | | | | | 694 | Table 5.1:BAT-associated energy efficiency levels (BAT-AEELs) for incineration | Major | BAT 21 - Table 5.1: Include separate BAT-AEELs for wood waste incinerators | Include new line in Table 5.1: wood waste (WW): 25 - 35 for new plants; 20 - 35 for existing plants. Change higher end of the BAT-AEELs for existing HW (excluding WW) from 32 to 25. Change BAT-AELs for existing MSW and other non-HW (excl. WW) to 17 - 32. | Energy efficiency of dedicated wood waste incinerators cannot be compared with the complexity and plant layouts of other hazardous waste incinerators or MSW incinerators. Wood waste incinerators (WWI) use a permanently varying mix of different wood qualities, but comparable LHV. In the data collection, WWI should be treated equally regardless of wood waste quality input (hazardous or non-hazardous character). In particular, reference plants BE-11, DE-1, DE-2, DE-4, DE-5, DE-31, DE-32, DE-33, UK17, and UK19 are typical WWI that should be excluded from the derivation of BAT-AEELs for MSW or HW. However, they should be used for deriving a specific BAT-AEEL for wood waste. |
| helene.lavray | | 63 | Selected Text | 5 | 1 | 4 | | | | | 694 | Table 5.1:BAT-associated energy efficiency levels (BAT-AEELs) for incineration | Major | BAT 21 - Table 5.1: BAT-AEELs for SS only indicative | Extend footnote 5 to existing plants using sewage sludge; add statement that gross electrical efficiency not only depends on the water content, but also on the pretreatment of the sewage sludge (e.g. raw/untreated or rotted/digested) and the nature and share of auxiliary fuel and other complimentary waste fuels used; include clarification in footnote 5 that the BAT-AEELs are only indicative for sewage sludge. | The proposed BAT-AEELs for SS are only based on reference plants applying FBC technology. In practice, a broad variety of plant sizes and firing technologies are applied using se-wage sludges of very different water content and LHV. In particular, reference plant DE-16 (setting the higher range of the BAT-AEEPL) is an alone standing large SS incinerator using a broad range of public and industrial sewage sludges as well as sludges and other residues from the chemical industry. DE-16 is supplying electricity to the grid and is not associated with a public waste water treatment facility with its own peculiarities and electricity and heat demand profiles. Hence, due to the limited availability of reference plant data for SS incineration and the fact that gross electricity is highly dependent on the water content and the pre-treatment of the sludge as well as the complimentary auxiliary fuel and other waste fuel input (see |
| helene.lavray | | 65 | Selected Text | 5 | 1 | 5 | 1 | | | | 695 | BAT 22 | Major | BAT 22 - include applicability restriction for wood waste | Include restriction of applicability: not generally applicable for storage of wood waste | Sorted wood waste is not associated with significant odour emissions and is often not stored in enclosed buildings. Waste wood incinerators for electricity generation are increasingly operated in line with the electricity grid requirements. The provision minimising the amount of waste in storage during shutdown periods should not be applicable for waste wood incineration. |
| helene.lavray | | 66 | Selected Text | 5 | 1 | 5 | 1 | | | | 695 | BAT 23 | Major | BAT 23 - include applicability restriction concerning direct injection of liquid sewage sludge | It should be clarified that BAT 23 is not generally applicable for sewage sludge. | Allow for pre-mixing with other waste and/or pre-drying of sewage sludge prior to incineration. |

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| helene.lavray | | 67 | Selected Text | 5 | 1 | 5 | 1 | | | | | | 695 | BAT 22. | Major | BAT 22: Adjust BAT 22 to the requirements for similar storage and pre-treatment of waste in the BATC of WT-BREF for bulk waste storage and pre-treatment of waste. | BAT 22: Introduce the same requirements for bulk storage and pre-treatment of waste as proposed in the WT-BREF preFD (See proposed BAT23 and BAT24 in WT-BREF). | Avoid duplicative and potentially conflicting BREF requirements for alone-standing waste storage and waste treatment areas. The proposed BAT 22 is not feasible for plants where the storage and pre treatment resembles WT-plants with storage and treatment at the site. It is not reasonable that BAT for storage is not the same for WI-plant and WT-plants. |
| helene.lavray | | 68 | Selected Text | 5 | 1 | 5 | 1 | | | | | | 695 | BAT 22 | Major | BAT 22: Add further BAT techniques | BAT 22: "BAT is to minimise the amount of waste in storage and/or to use an alternative abatement technique (e.g. a wet scrubber or chemical odour filter or biological odour filter) and/or to conduct the extracted air to stack." | Add further exemplary common techniques to reduce diffuse and/or odour emissions oth than wet scrubber. |
| helene.lavray | | 69 | Selected Text | 5 | 1 | 5 | 2 | | | | | | 695 | Generally applicable to new plants and to major retrofits of existing plants | Major | BAT 24 should not be considered to be generally applicable for major retrofits of existing plants. | Restrict applicability of BAT 24: "Generally applicable to new plants" | The definition of new plants (see page 678) includes complete replacements of a plant. The listed measures can only be used optimally in the design of new power stations. In existing power plants, it is much more difficult or even impossible to implement these measures. In addition, the term "major retrofits" can not be precisely defined. BAT 24 should not be applicable for "major retrofits of existing plants" |
| helene.lavray | | 70 | Selected Text | 5 | 1 | 5 | 2 | | | | | | 695 | BAT 24. | Major | BAT 24: Delete BAT 24 | BAT 24: Delete BAT 24 | Flow modelling is one out of many other techniques for plant design and optimisation. If introduced as a specific BAT it is given too much attention in relation to other methods and techniques used in plant design. Flow modelling is not an appropriate method during the operation of the plant; so it should be clearly said that this concerns only the plant design and commissioning phases. Flow modelling in the design phase is not always necessary, but could be useful when designing e.g. an SNCR system with respect to nitrogen. |
| helene.lavray | | 71 | Selected Text | 5 | 1 | 5 | 2 | 1 | | | | | 697 | Table 5.2:BAT-associated emission levels (BAT-AELs) for emissions to air of dust, metals and metalloids from incineration | Major | BAT 26 - Table 5.2 (dust): Do not prescribe only bag filter as BAT. Formulate BAT-AELs in a technology-neutral manner. | Change BAT-AEL-range for dust for all existing plants to 2 - 7 mg/m³. For this purpose modify footnote 1 to Table 5.2 as follows: The higher end of the BAT-AEL range is 7 mg/m³ for existing plants." | According to BAT 26, both technologies for reduction of dust emissions, bag filter and ESP, are BAT. BAT conclusions should not be prescriptive and, hence, not exclude certain BAT technologies. The footnote 1 to Table 5.2 should be applicable for all existing plants disregardless of technology applied. |
| helene.lavray | | 72 | Selected Text | 5 | 1 | 5 | 2 | 1 | | | | | 697 | Table 5.2:BAT-associated emission levels (BAT-AELs) for emissions to air of dust, metals and metalloids from incineration | Major | BAT 26 - Table 5.2 (dust): Include derogation for small existing incinerators. | Extend footnote 7 for dust emissions to existing plants (excluding HW other than WW) with a nominal capacity of 12 tonnes per hour or less. | Footnote 7 should be extended to accomodate all small waste incinerators with a nominal capacity of 12 tonnes per hour or less. |

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| helene.lavray | | 73 | Selected Text | 5 | 1 | 5 | 2 | 1 | | | | | 697 | Table 5.2:BAT-associated emission levels (BAT-AELs) for emissions to air of dust, metals and metalloids from incineration | Major | BAT 26: Values at lower end of dust range cannot be properly measured using available measurement equipment (AMS and SRM), systems and methods compliant with CEN Standards, currently installed in order to cover continuous monitoring and periodic measurements. | Insert additional footnote for dust-BAT-AEL: "Lower end of the range should be assessed considering EN standard for measurement." | The LoQ and uncertainty associated with the measurement have to be taken in account when setting the BAT-AEL range: identify the performances of the monitoring techniques available on the market in accordance with current EN Standard so to review lower end of the range as minimum achievable ELVs /BATAELs. The purpose of the BAT-AELs are to serve as marks for ELVs in environmental permits. It must therefore be possible for the operators to prove that they comply with the ELVs set according to BAT-AELs in this document. For this reason BAT-AELs must not be set on levels that prevent successful calibration according to prescribed standards, given the limitations of the methods described in these standards. (see JRC Reference Report on Monitoring of emissions to air and water from IED installations - Revised final draft July 2016) |
| helene.lavray | | 74 | Selected Text | 5 | 1 | 5 | 2 | 1 | | | | | 697 | BAT 27 | Major | BAT 27: This BAT conclusion requires a major overhaul to make it feasible and relevant for both dry and wet treatment plants. Include a list of optional BAT techniques for dry ad wet treatment of slags and bottom ashes | BAT 27: Rewrite introductory sentence "In order to reduce dust emissions to air from the treatment of slags and bottom ashes, BAT is to use one or an appropriate combination of the techniques given below". Include table with common BAT techniques and applicability considerations dealing with the specific characteristics of wet and dry treatments. Techniques: a. enclosed equipment at relevant points of dust emissions (e.g. crushing, sieving) b. keep enclosed equipment under negative pressure (not applicable for wet bottom ash treatment facilities) c. treatment of the extracted air with a bag filter (not applicable for sticky dust) d. treatment of the extracted air with a cyclone e. ... etc. | The techniques described in BAT 27 are based on specific types of (dry) treatment of bottom ash. Enclosurement of equipment as well as dust capture and removal should only be required if relevant dust emissions occur. It should be clarified that BAT 27 is in the present form not applicable to storage and loading of material on site or storage fields associated with the slag and bottom ash treatment plant. Change the applicability accordingly and/or introduce other techniques to reduce diffuse emissions. Introduce other techniques that do not require enclosed equipment and channelled emissions for other treatment methods than the type of plants listed in table 3.55. Introduce suitable applicability restrictions for the requirement of enclosed equipment bag-filters for treatment methods in the type of plants listed in table 3.55. The plant used as a bases for the proposed BAT is specific and not generally applicable to all |
| helene.lavray | | 75 | Selected Text | 5 | 1 | 5 | 2 | 2 | | | | | 697 | Boiler sorbent injection | Major | BAT 28 e: include applicability restriction for boiler sorbent injection | BAT 28 e: Boiler sorbent injection: "Only applicable to fluidised bed boilers" | Applicability of boiler injection is usually limited to fluidised bed boilers. |
| helene.lavray | | 76 | Selected Text | 5 | 1 | 5 | 2 | 2 | | | | | 698 | Table 5.4:BAT-associated emission levels (BAT-AELs) for emissions to air of HCl, HF and SO2 from incineration | Major | BAT 28 - Averaging period: include clarification for periodic measurement of HCl, HF and SO2 | HCl, HF, SO2: Daily average or average over the sampling period | Clarify averaging period in cases of periodic measurement of HCl, HF or SO2. |

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| helene.lavray | | 77 | Selected Text | 5 | 1 | 5 | 2 | 2 | | | | | 698 | Table 5.4:BAT-associated emission levels (BAT-AELs) for emissions to air of HCl, HF and SO2 from incineration | Major | BAT 28 - BAT-AEL for HCl for existing plants | Include additional footnote for HCl: "The higher end of the BAT-AEL range is 10 mg/m³ for existing plants applying dry abatement techniques for desulfurisation such as direct desulfurisation (in boiler), boiler sorbent injection or dry sorbent injection." | See reference plant n° DE 68 and emission performance of other FBC plants or other incinerators applying dry desulfurisation techniques. WI Kick-off-meeting conclusions identified HCl as non-KEI. |
| helene.lavray | | 78 | Selected Text | 5 | 1 | 5 | 2 | 2 | | | | | 698 | Table 5.4:BAT-associated emission levels (BAT-AELs) for emissions to air of HCl, HF and SO2 from incineration | Major | BAT 28: Values at lower end of the HCl and HF range cannot be properly measured using available equipment (AMS and SRM), systems and methods compliant with CEN Standards, currently installed in order to cover continuous monitoring and periodic measurements. | remove footnote 1 Insert additional footnote: "Lower end of the range should be assessed considering EN standard for measurement." | The LoQ and uncertainty associated with the measurement have to be taken in account when setting BAT-AEL range: identify the performances of the monitoring techniques available on the market in accordance with current EN Standard so to review lower end of the range as minimum achievable ELVs /BATAELs. The purpose of the BAT-AELs are to serve as marks for ELVs in environmental permits. It must therefore be possible for the operators to prove that they comply with the ELVs set according to BAT-AELs in this document. For this reason BAT-AELs must not be set on levels that prevent successful calibration according to prescribed standards, given the limitations of the methods described in these standards. (see JRC Reference Report on Monitoring of emissions to air and water from IED installations - Revised final draft July 2016) |
| helene.lavray | | 79 | Selected Text | 5 | 1 | 5 | 2 | 2 | | | | | 698 | Table 5.4:BAT-associated emission levels (BAT-AELs) for emissions to air of HCl, HF and SO2 from incineration | Major | BAT 28: include footnote for HF in case of certain co-incineration plants fitted with wet FGD with a downstream gas-gas-heater | Insert additional footnote for HF: In the case of co-incineration plants fitted with wet FGD with a downstream gas-gas heater, the higher end of the BAT-AEL range is 7 mg/Nm3 | Consistency with LCP BREF. See LCP BREF BAT Conclusion BAT 21 - Table 5, footnote 3. WI Kick-off-meeting conclusions identified HF as non-KEI. |
| helene.lavray | | 80 | Selected Text | 5 | 1 | 5 | 2 | 3 | | | | | 698 | Table 5.5:BAT-associated emission levels (BAT-AELs) for NOX and CO emissions to air from incineration and for NH3 emissions from the use of SNCR and/or SCR | Major | BAT 29 - Table 5.5 (NOx): Include derogation for small incinerators. | Include further footnote for NOx in small incinerators: The higher end of the BAT-AEL range is 150 mg/m³ for new plants and 180 mg/m³ for existing plants with a nominal capacity of 12 tonnes per hour or less. | The application of SCR cannot be considered to be generally applicable for small installations due to the excessive capital cost. |
| helene.lavray | | 81 | Selected Text | 5 | 1 | 5 | 2 | 3 | | | | | 698 | Table 5.5:BAT-associated emission levels (BAT-AELs) for NOX and CO emissions to air from incineration and for NH3 emissions from the use of SNCR and/or SCR | Major | BAT 29: CO emission levels should be considered as indicative emission values for existing co-incineration plants. | Insert additional footnote concerning CO-BAT-AELs: "For existing co-incinerations plants, these levels are indicative." | Consistency with LCP BREF: see LCP BREF BAT Conclusion - BAT 20, CO indicative emission level. WI Kick-off-meeting conclusions identified CO as non-KEI. |

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| helene.lavray | | 82 | Selected Text | 5 | 1 | 5 | 2 | 3 | | | | 698 | Table 5.5:BAT-associated emission levels (BAT-AELs) for NOX and CO emissions to air from incineration and for NH3 emissions from the use of SNCR and/or SCR | Major | BAT 29: Amend footnote concerning the lower end of the BAT-AEL range for NOx and increase the lower end of the range for existing plants from 50 to 65 mg/m ³ in line with reference plant data collection. | Modify footnote (1): "The lower end of the BAT-AEL range can be achieved when using most advanced SCR systems design." For existing plants the lower end of the range should be increased from 50 to 65 mg/m ³ . | Footnote (1) to Table 5.5 should be amended considering the case of existing plants already applying SCR that cannot achieve so high performances in all operating conditions, and considering limitations for further retrofitting due to techno-economic reasons. Only a small number of reference plants reported NOx emissions at a level below 65 mg/m ³ . Best-performing smaller plants reported somewhat higher values. Such plants are either recent and newly commissioned plants (after 2000) in some cases applying SNCR and SCR in combination (e.g. IT 05). In some cases, operators of reference lines that reported very low NOx emissions in the year of data collection reported significantly higher emissions of other reference lines at the same site applying the same technology for NOx reduction (e. DE 66-1 and 66-2). As a matter of principle, it can be expected that the lower BAT-AEL range of existing plants should be |
| helene.lavray | | 83 | Selected Text | 5 | 1 | 5 | 2 | 3 | | | | 698 | Table 5.5:BAT-associated emission levels (BAT-AELs) for NOX and CO emissions to air from incineration and for NH3 emissions from the use of SNCR and/or SCR | Major | BAT 29: Change averaging period for NH3 | Change averaging period for NH3 to: "Daily average or average over the sampling period." | See comment to BAT 5 concerning period measurement of NH3 in certain cases in line with IED provisions. |
| helene.lavray | | 84 | Selected Text | 5 | 1 | 5 | 2 | 3 | | | | 699 | Selective catalytic reduction (SCR) | Major | BAT 29 e: extend applicability restriction to technical and economic restrictions | BAT 29 e: Change text of applicability restriction: "There may be technical and economic restrictions for retrofitting existing combustion plants. Retrofitting existing combustion plants may be constrained by the availability of sufficient space." | Applicability restrictions for SCR retrofitting are described insufficiently. Technical constraints may include among others space restrictions and waste characteristics. See also applicability restrictions for SCR retrofitting in BREF LCP BAT-conclusions for solid and liquid fuels. In general, SCR retrofitting is not proportionate for existing plants fitted with SNCR technology. |
| helene.lavray | | 85 | Selected Text | 5 | 1 | 5 | 2 | 3 | | | | 698 | Table 5.5:BAT-associated emission levels (BAT-AELs) for NOX and CO emissions to air from incineration and for NH3 emissions from the use of SNCR and/or SCR | Major | BAT 29 - Table 5.5: Extend footnote 4 concerning NH3 to plants fitted with SCR but not with wet abatement technique | Footnote (4): For existing plants fitted with SNCR or SCR without wet abatement techniques, the higher end of the BAT-AEL range is 15 mg/Nm ³ . | |
| helene.lavray | | 86 | Selected Text | 5 | 1 | 5 | 2 | 4 | | | | 699 | BAT 30 | Major | BAT 30: allow for selection of techniques for reduction of PCDD/F and PCBs | Rewrite introduction to BAT 30: "In order to reduce emissions of organic compounds including PCDD/F and Dioxin-like PCBs from the incineration of waste, BAT is to use an appropriate combination of techniques (a) to (i) given below." | The BAT conclusion should not be too prescriptive, but leave flexibility to the operator to find the appropriate combination of techniques associated with BAT. |

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| helene.lavray | | 87 | Selected Text | 5 | 1 | 5 | 2 | 4 | | | | | 699 | Knowledge and control of the specifications of the waste being fed into the incineration chamber, including their combustion characteristics, to ensure homogeneous, stable and optimal incineration conditions | Major | BAT 30 b: Reword description | BAT 30 b: Reword description: "Knowledge and control of the wastes being fed into the incineration chamber, including their combustion characteristics, to ensure stable and optimal incineration conditions." | Many waste incineration plants are designed to incinerate inhomogeneous residual waste that remains after separation to recycling and as a reject from industries. |
| helene.lavray | | 88 | Selected Text | 5 | 1 | 5 | 2 | 4 | | | | | 699 | Flue-gas quenching | Major | BAT 30 d: restrict applicability to new plants and allow for other techniques with similiar effect | Restrict applicability of "flue-gas quenching" to new plants. Allow for other techniques serving a similiar purpose: "Use a design that certifies a quick passage through the critical temperature window." without naming a specific technical design. | Flue-gas quenching is not possible in existing plants, and generally ruins the energy efficiency of the plant. There are other ways to obtain the intended goal of this measure. Quenching will also result in higher flue gas flows and counteracts targets on high energy and resource efficiency. |
| helene.lavray | | 89 | Selected Text | 5 | 1 | 5 | 2 | 5 | | | | | 700 | A wet scrubber operated at a pH value below 1. | Major | BAT 31 a: Change text regarding pH value. | Change BAT 31 a to: "A wet scrubber operated at a pH value of approximately 1." | Although some wet scrubbers may be operated with pH<1, others do fine with values slightly above 1. Low pH increases the health risk for staff and should be avoided when possible. |
| helene.lavray | | 90 | Selected Text | 5 | 1 | 5 | 2 | 5 | | | | | 700 | Boiler bromine addition | Major | BAT 31 b: restrict applicability of bromine addition. | Limit applicability to the types of incineration plants and wastes where the technique has successfully be tested (i.e. rotary kilns and fluidized bed combustion of sewage sludge). Also take into consideration the known and potential cross-media effects and technical limitations when describing the applicability. For example is the technique not relevant for plants burning waste with a high chlorine content. Update the cross-media effects section of Chapter 4.5.6.7 (p. 619), accordingly. | Br is well known for damaging the filter bags in bag filters. Moreover, the risk of forming bromoxins is poorly studied. It also cause an increase in chemical consumption and may cause problems for processes aiming at utilising the fly ash. Also, the emission of Br ₂ , a highly poisonous gas may occur due to different oxidative equilibrium than what is found in some coal or waste combustion plants. The technique is not generally used in waste incineration plants and thus not a general BAT. Only tested on rotary and FB. The precautionary principle should be taken into consideration. The scientific bases to determine environmental benefits and downsides of the technique is insufficient, as well as the knowledge of the technical and economical limitations of the technique. Taking the above in consideration, there is no sound base to classify the technique as a generally applicable BAT. |

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| helene.lavray | | 91 | Selected Text | 5 | 1 | 5 | 2 | 5 | | | | | | 701 | Table 5.7:BAT-associated emission levels (BAT-AELs) for emissions of mercury to air from incineration | Major | BAT 31: Remove the indicative half-hourly values for mercury from Chapter 5. | Delete or move this information on indicative values to Chapter 3. | It has been agreed by the TWG not to provide half-hourly emission values (BAT-AELs) and this was also mentioned in the background documents provided by EIPPCB with WI BREF D1. Even if the emission levels are supposed to be only indicative, this provision it thus misleading in Chapter 5 including the binding BAT conclusions and should be moved to Chapter 3. The determined emission ranges for Hg must take into account that increased Hg emissions may occasionally occur due to unrecognized Hg-containing inputs in the waste. The events are rarely classified, but the impact of such events must be reflected in the BAT-AEL range |
| helene.lavray | | 92 | Selected Text | 5 | 1 | 6 | | | | | | | | 703 | Table 5.8:BAT-AELs for direct emissions to a receiving water body | Major | BAT 34: Include '4 of 5 measuring method' | Table 5.8: Change heading of the fourth column: "BAT-AEL (daily average or 4 out of 5 measuring method)" | According to BAT 34, for waste water flows from flue gas cleaning the sample duration has to be based on a daily mean value. However, other approaches commonly used in Europe should be enabled. In particular, the '4 out of 5 measuring method should be mentioned. |
| helene.lavray | | 93 | Selected Text | 5 | 1 | 6 | | | | | | | | 702 | BAT 33. | Major | BAT 33: Include common practice to deliver waste water to an external waste water treatment plant | Include letter d (new): "d. supply of waste water to an external waste water treatment plant, equipped with appropriate techniques" | BAT 33 should take into account that some plant operators do not treat their waste water within the installation boundaries, but deliver them to an external waste water treatment plant. The extent of the treatment of wastewater from wet flue gas desulphurisation is specifically dependent on the local boundary conditions at the site of the waste incineration plant and extends from the procedure described under c up to the addition of wastewater to an external sewage treatment plant. |
| helene.lavray | | 94 | Selected Text | 5 | 1 | 6 | | | | | | | | 702 | BAT 33.In order to reduce water usage and to prevent or reduce the generation of waste water from the incineration plant, BAT is to use one or a combination of the techniques given below | Major | BAT 33: Allow for other measures achieving a comparable level of environmental protection. | Change wording of the title: "In order to reduce water usage and to prevent or reduce the generation of waste water from the incineration plant, BAT is e.g. to use one or a combination of the techniques given below or other equivalent techniques." | The given technique options (a,b and c) represent a number of not exhaustive examples of the techniques that might be used to reduce water usage and to prevent waste water generation. Other equivalent techniques should also be allowed instead of those 3 mentioned in BAT 33. |
| helene.lavray | | 95 | Selected Text | 5 | 1 | 6 | | | | | | | | 703 | Table 5.8:BAT-AELs for direct emissions to a receiving water body | Major | BAT 34: Limit TOC BAT-AEL to bottom ash treatment | Delete reference to FGC, establish BAT-AEL for TOC only for bottom ash treatment | Consistency with IED Annex VI. TOC measurement is not required for waste water from FGC. |

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| helene.lavray | | 96 | Selected Text | 5 | 1 | 7 | | | | | | | 703 | BAT 35.In order to increase resource efficiency and improve the recovery of useful materials from the incineration residues, BAT is to handle and treat bottom ashes separately from fly ashes and from other FGC residues, and to use a combination of the techniques given below. | Major | BAT 35: Do not require seperate handling of bottom ashes in all cases | Change introductory sentence of BAT 35: "In order to increase resource efficiency and improve the recovery of useful materials from the incineration residues, BAT is to use one or an appropriate combination of the techniques given below." Add new BAT technique: "Handle and treat bottom ashes separately from fly ashes and from other FGC residues with applicability: Generally applicable for new plants, applicable for existing plants subject to techno-economic restrictions and flue-gas cleaning system configuration." | To handle and treat bottom ashes separately from fly ashes and from other FGC residues is problematic from techno-economic perspective for existing plants designed for joint management of these materials. This BAT technique should not be mandatory but rather one of the listed possibilities. |
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▶ Commitment, innovation, pro-activeness

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Union of the Electricity Industry - EURELECTRIC aisbl
Boulevard de l'Impératrice, 66 - bte 2
B - 1000 Brussels • Belgium
Tel: + 32 2 515 10 00 • Fax: + 32 2 515 10 10
VAT: BE 0462 679 112 • www.eurelectric.org
EU Transparency Register number: [4271427696-87](https://ec.europa.eu/transparency/regexp1/index.cfm?do=entity.entity_details&entity_id=4271427696-87)