

**OPINION OF THE FORUM FOR THE EXCHANGE OF INFORMATION PURSUANT TO ARTICLE
13 OF THE DIRECTIVE 2010/75/EU ON INDUSTRIAL EMISSIONS (IED ARTICLE 13
FORUM)**

concerning the Draft Best Available Techniques (BAT) Reference document for
Large Volume Organic Chemicals

Meeting of 5 April 2017

1. BACKGROUND

Article 13(1) of Directive 2010/75/EU on industrial emissions¹ (the Directive) requires the Commission to organise an exchange of information between Member States, the industries concerned, non-governmental organisations promoting environmental protection and the Commission.

Article 13(3) of the Directive requires the Commission to establish and regularly convene a forum composed of representatives of Member States, the industries concerned and non-governmental organisations promoting environmental protection and to obtain the opinion of the forum on the practical arrangements for the exchange of information foreseen under that Article. In accordance with Article 13(3) of the Directive, the guidance referred to in points (c) and (d) of the second subparagraph of that Article shall take account of the opinion of the forum and shall be adopted in accordance with the regulatory procedure referred to in Article 75(2).

Commission Decision 2011/C 146/03² established the forum for the exchange of information pursuant to Article 13 of the Directive (the forum). In accordance with Article 3 of this Decision, the forum may be consulted on any matter relating to Article 13 of the Directive or on any matter relating to BAT as defined in Article 3(10) of the Directive.

2. OPINION OF THE FORUM

In accordance with Article 13(3) of the Directive the forum hereby gives its opinion on the draft Best Available Techniques (BAT) reference document for Large Volume Organic Chemicals as presented at the meeting of the forum of 5 April 2017 (<http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=31494&no=2>):

¹ OJ L 334, 17.12.2010, p. 17–119, Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control), Text with EEA relevance,

² OJ C 146, 17.5.2011, Commission Decision of 16 May 2011 establishing a forum for the exchange of information pursuant to Article 13 of the Directive 2010/75/EU on industrial emissions

Annex A

- (1) The forum welcomes the draft Best Available Techniques (BAT) reference document for Large Volume Organic Chemicals as presented by the Commission.
- (2) The forum acknowledges the discussions held at its meeting of 5 April 2017 and agrees that the changes to the draft Best Available Techniques (BAT) reference document for Large Volume Organic Chemicals, as proposed in Annex A, should be included in the final document.
- (3) The forum reaffirms the comments in Annex B as representing the views of certain members of the forum but, on which, no consensus exists within the forum to include them in the final document.

Brussels, 5 April 2017

Annex A: Comments on the draft Best Available Techniques (BAT) reference document for Large Volume Organic Chemicals that are consensual within the forum.

Annex B: Comments on the draft Best Available Techniques (BAT) reference document for Large Volume Organic Chemicals that are representing the view of certain members of the forum.

3. ANNEX A: COMMENTS ON THE DRAFT BEST AVAILABLE TECHNIQUES (BAT) REFERENCE DOCUMENT FOR LARGE VOLUME ORGANIC CHEMICALS THAT ARE CONSENSUAL WITHIN THE FORUM

No	Chapter	Comment description	Proposal for modification	Rationale
1	Scope	Typo	Reference to "h (k)" should be corrected.	Typo
2	Scope	Incineration of waste	Change "BAT 6654 and BAT 76144" to "BAT 66 and BAT 76"	Typo. Correct wrong reference.
3	Scope	Ethanol production	Change "willmay" to "may"	Typo
4	2.1.2.1.3	The statement "Most industrial ethanol is manufactured by the vapour phase hydration of ethylene over a solid phosphoric acid catalyst supported on porous clay beds at around 240 °C and 68 barg" is not true.	The paragraph should be changed to "Industrial ethanol for special purposes (e.g. pharmaceutical, synthetic or analytical purposes with specific demands on the composition of the ethanol batch) is manufactured by the vapour phase hydration of ethylene over a solid phosphoric acid catalyst supported on porous clay beds at around 240 °C and 68 barg."	Nowadays most industrial ethanol (non-food, non-energetic) is manufactured by fermentation. Ethanol produced from fossil raw materials is a niche product for special purposes and is almost exclusively manufactured by one facility within the EU. Such purposes are e.g. pharmaceutical, synthetic or analytical applications which may even be hampered by traces of the side-products of fermentation. Another application of fossil ethanol is the use as baseline standard in liquid scintillation spectrometry.

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5	2.3	Range should be 0.1-1 and not 0.11	Should be 0.1-1.1	Typo
6	3.3.2.1	Inconsistencies between descriptive chapters and BAT-conclusions. At the final meeting (concluding slide 97) it was decided to "ensure consistency between the BAT conclusions and section 4.3.2 of the LVOC BREF, concerning the presence/absence of substances that cannot be dealt with adequately in the downstream biological treatment"	An aqueous effluent containing significant quantities of these organic substances must should be pre-treated to a degree that would be suitable for the resultant effluent to be discharged to a downstream waste water treatment.	The descriptive chapters and the BAT-conclusions should be consistent.
7	3.3.2.2	Inconsistencies between descriptive chapters and BAT-conclusions. At the FM (concluding slide 97) was decided to "ensure consistency between the BAT conclusions and section 4.3.2 of the LVOC BREF, concerning the presence/absence of substances that cannot be dealt with adequately in the downstream biological treatment"	Remove from chapter 3.3.2.2: Such an effluent can potentially cause problems to a downstream waste plant due to low biodegradability. Some level of pre-treatment is likely to be required depending on the downstream waste water treatment.	The descriptive chapters and the BAT-conclusions should be consistent.

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8	8.4.1.1	The VOC value for plant No 4 originates from the questionnaire 2012. But in the supplementary information, sent to EIPPCB in October 2015 it can be seen for plant No 4 that the max value is approx. 70 mg/Nm ³ . Furthermore it should be indicated, that this value is a NMVOC value, according to the supplementary information. And, in addition to the information in the questionnaire, the sampling frequency is 4 spot samples/year (not 2 samples/year as indicated in the table). The averaging period is 8 hours (not 3 years as indicated in the table).	Table 11.6 (now Table 8.6 on page 409) has been corrected except for Plant No 4 where monitoring still shows 2 samples/year instead of the correct 4/year and an averaging period of 3 years instead of the correct 8 hours.	Correct wrong information
9	10.3.1.5.1	Table 10.3 - The information included in this table refers to TDI plants.	Check and amend information in Table 10.3.	The Portuguese plant produces only pMDI (and not TDI). Please find information on MDI production in Table 10.1 (section 10.1).
10	10.3.1.5.1	Table 10.3 – permit data for a waste incinerator made available for D1 and related to the Portuguese plant should be confirmed.	Check and amend information in Table 10.3.	A table with the ELVs set for the MDI plant in Portugal was provided. This document was provided when D1 of the LVOC BREF was released. With regard to this installation, the waste incinerator falls under Chapter IV and section 5.2b) of IED (although it also

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				burns waste gas streams). Therefore, the information in Table 10.3 may not be comparable with other plants.
11	12.3.6	The activated carbon used in the off-gas treatment of the oxidation unit slowly degrades and has to be exchanged every one to seven years.	We propose to use the time span of the data collection (footnote table 15.8): the activated carbon used in the off-gas treatment of the oxidation unit slowly degrades and has to be exchanged in frequencies between one to more than 10 years.	Correct wrong information.
12	12.4.1.1.4	In the footnote to Table 12.8 it says that according to the data collection, the replacement frequency for the spent activated carbon ranges from one to two years to more than 10 years.	We propose to leave the time span as it is.	-
13	13.0	Wrong technical description: "the use of a waste incinerator as a thermal oxidizer for the treatment of waste gas streams from the production of TDI/MDI and/or EDC/VCM is covered by these conclusions".	The use of a thermal oxidizer for the treatment of waste gas streams from the production of TDI/MDI and/or EDC/VCM is covered by these conclusions, which uses liquid fuel substitutes instead of natural gas.	Main activity is the treatment of waste gases, not the incineration of waste. This will be done by thermal recovery of fuel substitutes and protection of natural resources. Waste incinerators are defined in IED by threshold values of waste consumption (3 t/h or 10 t/d).
14	13.1.2.1	Erroneous references to the	The corresponding reference tables of BAT 4 are 13.1 and 13.10 and not 17.1	Correct reference

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No	Chapter	Comment description	Proposal for modification	Rationale
		corresponding BAT-AELs tables.	and 17.10.	
15	13.1.2.2	There are no BAT-AELs connected to BAT 7.	Add in BAT 7: "BAT-associated emission levels (BAT-AELs): See Table 13.1"	
16	13.1.2.3.1	Erroneous cross reference in the heading of BAT 9.	In the heading of BAT 9 the references to BAT 10a and BAT 10b are wrong and should be BAT 8a and BAT 8b.	Correct wrong reference.
17	13.1.2.3.2	In BAT 13 - technique a – there was a change of wording. The text of the final meeting slides was: „Removal of high levels of NO _x precursors from the process offgas streams“ and “Remove (if possible, for reuse) high levels of NO _x precursors prior to thermal treatment, e.g. by scrubbing, condensation or adsorption”.	Use the original wording of the final meeting slides.	There was no decision of final meeting for this change. The new formulation does not solve the problem, that there is no quantification possible. The new description is only quantitative as the old one. There is no improvement of clarification. The applicability is limited to high levels of NO _x precursor concentrations in the raw gas.
18	13.1.6.	Erroneous cross reference in the 'Applicability' of technique c of BAT 18.	In BAT 18, the 'Applicability' clause of technique c. should refer to "technique b" and not to BAT 28b.	Correct wrong reference
19	13.3.1	Erroneous cross references in the heading of BAT 24.	The heading of BAT 24 should not refer to BAT 10b and BAT 11 but instead to BAT 8b and BAT 9.	Correct wrong references

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20	13.6.2	BAT 50 numbering was changed, reference does not match anymore	Change BAT 50 which refers to BAT 23 instead of BAT 15.	Correct wrong reference.
21	13.7.1	Erroneous cross reference in the heading of BAT 57.	The heading of BAT 57 should refer to technique d and not to technique e.	Correct wrong reference.
22	13.9.1	Erroneous cross reference in the heading of BAT 67.	The main text of BAT 67 refers to technique a and b and not to technique b and c.	Correct wrong reference
23	13.9.2	Erroneous cross reference in the 'Description' of technique a. in BAT 73.	In BAT 73, the cross reference in 'Description' of technique a. should refer to technique b and not c2.	Correct wrong reference.
24	13.10.1.2	Erroneous cross reference in the heading of BAT 77.	The heading of BAT 77 should refer to technique a and b and not to technique b and c.	Correct wrong reference.
25	13.10.2	Erroneous cross reference in the heading of BAT 81.	The heading of BAT 81 should refer to technique b and not technique i.	Correct wrong reference
26	13.11	Reference to general BAT conclusions	Change Section 13.2 to 13.1	Correct wrong reference
27	14	Table 14.2 - BAT numbering was changed	Reference to BAT 55a should now be 69a	Correct wrong reference.

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28	14	Table 14.2 Dissenting views evaluation: Set BAT-AEL for emission of CO raised earlier.	Keep CO emissions as indicative parameters.	NO _x emissions have a more serious effect on environment than CO, it's toxicity is somewhere between 20 to 50 times the one of CO. NO _x reduction unavoidably increases formation of CO. Therefore, any attempts to influence CO emission would result in increasing NO _x emissions.

4. ANNEX B: COMMENTS ON THE DRAFT BEST AVAILABLE TECHNIQUES (BAT) REFERENCE DOCUMENT FOR LARGE VOLUME ORGANIC CHEMICALS THAT ARE REPRESENTING THE VIEW OF CERTAIN MEMBERS OF THE FORUM

No	From	Chapter	Comment description	Proposal for modification	Rationale
1	ePURE	2.1.2.1.3	The chapter "ethanol" is placed before the chapter "bioethanol".	With respect to its industrial relevance the chapter "bioethanol" should be placed before the chapter "ethanol".	The total production numbers of ethanol produced by fermentation exceed the production numbers of ethanol derived from fossil raw materials by far. Even for non-energetic industrial applications bioethanol is more common than fossil ethanol.
2	ePURE	2.1.2.1.4	The chapter "ethanol" is placed before the chapter "bioethanol".	With respect to its industrial relevance the chapter "bioethanol" should be placed before the chapter "ethanol".	The total production numbers of ethanol produced by fermentation exceed the production numbers of ethanol derived from fossil raw materials by far. Even for non-energetic industrial applications bioethanol is more common than fossil ethanol.

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No	From	Chapter	Comment description	Proposal for modification	Rationale
3	ePURE	2.1.2.1.4	The production of bioethanol (production of ethanol by fermentation) is unnecessarily described in this chapter.	The chapter "bioethanol" should be pruned to the few paragraphs that follow: "Bioethanol, i.e. ethanol production by alcoholic fermentation is the standard production method for ethanol accounting for more than 90% of its production within the EU. Large-scale ethanol production in Europe is predominantly based on grain (e.g. wheat, barley, triticale, rye and corn) and intermediate, co- and by-products from the production of sugar from sugar beets (e.g. diffusion juice, clarified juice, concentrated juice and molasses) as well as from the production of starch (e.g. B-, C-starch). Ethanol produced by alcoholic fermentation is used for alcoholic beverages and other foodstuffs as well as industrial and non-food commercial uses, e.g. motor fuel, additive for gasoline or solvent.	The production of bioethanol (production of ethanol by fermentation) is extensively described in the FDM BREF. Most bioethanol producing facilities are associated with food and feed producing facilities. The production process is the same in associated and stand-alone facilities. All bioethanol facilities producing food and/or feed as coproducts must meet the relevant food and feed criteria. Thus, the description of the bioethanol production process within the LVOC BREF is not necessary. A reference to its description within the FDM BREF is appropriate.

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No	From	Chapter	Comment description	Proposal for modification	Rationale
				<p>During fermentative production of ethanol typically food and feed co-products arise like for ethanol from cereals e.g. stillage, DDGS, gluten, bran, stillage and fusel oils and for ethanol from sugar beet e.g. sugar beet pulp, vinasses and fusel oils. From the fermentation gases as further co-product carbon dioxide can be separated, used after liquefaction e.g. for food and technical applications.</p> <p>Further details on the process of ethanol production by alcoholic fermentation can be found in the FDM BREF which also provides BAT and BAT-AELS for fermentative production of ethanol for alcoholic beverages and other foodstuffs as well as fermentative ethanol production of taking place in an installation covered by the activity description in Section 6.4 (b) (ii) of Annex I to Directive 2010/75/EU or as a directly associated activity to such an installation.</p>	

No	From	Chapter	Comment description	Proposal for modification	Rationale
				Environmental issues: Relevant environmental issues for ethanol production by alcoholic fermentation can be found in the FDM BREF." Thus, the table should be deleted.	
4	Belgium	3.3.2.3	Inconsistencies between descriptive chapters and BAT-conclusions. At the Final Meeting (concluding slide 97) was decided to "ensure consistency between the BAT conclusions and section 4.3.2 of the LVOC BREF, concerning the presence/absence of substances that cannot be dealt with adequately in the downstream biological treatment"	Make sure that the descriptive chapters and the BAT-conclusions are consistent.	The descriptive chapters and the BAT-conclusions should be consistent.
5	Slovakia	4.4.1.3	In order to avoid flaring, the waste gas is routed to an existing combustion unit or shared thermal oxidiser. For example, the off-gas from hydrogen stripping is sent to the site fuel gas system, and the oxygen-containing off-gas from steam-air stripping is routed to the firebox of a furnace.	In order to avoid flaring, the waste gas is routed to an existing combustion unit, shared thermal oxidiser or hydrocarbon stripping column (scrubber). For example, the off-gas from hydrogen stripping is sent to the site fuel gas system, and the oxygen-containing off-gas from steam-air stripping is routed to central flue gas system of available combustion equipment.	In situ regeneration of hydrogenation reactors occurs very rarely and last only short time during standard running of steam cracker (estimation: less than 4% on-stream time of the cracker unit). Emission of VOC in oxygen containing off gas is negligibly low; see chapter 3.3.1.5 lower olefin emissions to air from hydrogenation catalyst regeneration.

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6	Bulgaria	13.0	<p>The review of Chapter 13 "Best available techniques (BAT) conclusions for the production of large volume organic chemicals" gives the impression that the document does not include specific values for effectiveness indicators in the consumption of resources and substances, but only measures to improve this efficiency. Therefore, we consider that the document does not fully comply with the requirements of the legal definition</p>	-	<p>It must be provided and include all the information required in accordance with the legal definition of BAT conclusions during the next update of the document.</p>
7	Bulgaria	13.0	<p>The BAT conclusions contain information on pollutant emission levels in waste water only for three of the ten major sub-sectors of specific products manufacturing. We consider that this absence of information is also in contradiction with the legal definition of BAT conclusions</p>	-	<p>It must be provided and include all the information required in accordance with legal definition of BAT conclusions during the next update of the document.</p>

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No	From	Chapter	Comment description	Proposal for modification	Rationale
8	Poland	13.0	Modification the following text: [...] this may be covered by the BAT conclusions for Waste Incineration (WI) for incineration plants; however, the use of a waste incinerator as a thermal oxidiser for the treatment of waste gas streams from the production of TDI/MDI and/or EDC/VCM is covered by these conclusions (see BAT 66 and BAT 76);	[...] this may be covered by the BAT conclusions for Waste Incineration (WI) for incineration plants; however, the use of a waste incinerator mainly as a thermal oxidiser for the treatment of waste gas streams from the production of TDI/MDI and/or EDC/VCM is covered by these conclusions (see BAT 66 and BAT 76);	There are some cases when thermal oxidiser for the treatment of waste gas streams from the production of EDC/VCM treat also negligible amount of external feed. It has no impact on operating conditions and emissions occurring but without the word 'mainly' competent authorities may qualify such situation as waste incineration.
9	Portugal	13.0	As previously stated Portugal is concerned about the borders and complementarity of this and other BREFs and therefore considers that this issue must be clearly defined in order to ensure the harmonization of licensing interpretations in all Member States.	The LVOC BREF shall only apply to thermal oxidizers that burn waste gas streams in chemical installations that fall under the scope of this BREF.	For instance, when waste incineration activities are also developed in chemical installations, Portugal consider that these incineration activities fall under Chapter IV and section 5.2b) of Annex I of the Industrial Emissions Directive when the waste disposal capacity is above the established threshold, even when they are also used for the treatment of both waste and waste gas streams.

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No	From	Chapter	Comment description	Proposal for modification	Rationale
11	France	13.1.1	Add a footnote (5) in the table related to BAT1 for NO _x / « Continuous » (and adjust the following footnotes numbers as a consequence).	(5) For existing plants, where the total rated thermal input of process furnaces/heaters connected to the same stack is less than 100 MW, the monitoring frequency may be reduced to once every three months when retrofitting the equipment to set up continuous monitoring cannot be achieved without major modifications on the installation.	<p>This proposal comes from split view suggested by France that was supported by several MS during and after the final meeting.</p> <p>France considers that the CEFIC document "2016-12-16 CEFIC Position Paper on Split View Assessments Final.docx§2.2" posted on BATIS brings new information about technical-economic aspects and shows that the concern is not limited to the case of one French installation.</p> <p>We acknowledge, as the EIPPCB pointed it out, that the initial wording was not precise enough so we suggest here a new wording.</p>

No	From	Chapter	Comment description	Proposal for modification	Rationale
12	Portugal	13.1.1	<p>Regarding the proposal submitted by France to adapt the BAT conclusions for continuous measurement on existing furnaces (lower olefins cracker furnace), and despite the support of Portugal and other Member States to amend the BAT 1 (former BAT New1) in order to allow competent authorities to deal with site specific characteristics, this issue was not considered in the draft chapter for the concluding remarks and neither in the LVOC Final Draft. In the case of existing LVOC plants where there is no single stack for all furnaces, the requirement of continuous monitoring systems may lead to disproportionate costs that do not result in direct environmental benefits.</p>	<p>Regarding monitoring, we consider it important that the BREF allows sufficient flexibility so that the conditions to be established, in particular with regard to the parameters and frequency of monitoring, can be based on a case-by-case analysis, in particular in the case of existing facilities.</p>	<p>Where existing plants are not equipped with a single stack, the BAT conclusions shall consider that continuous monitoring may be adapted due to the practicality or feasibility of retrofitting equipment.</p>

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No	From	Chapter	Comment description	Proposal for modification	Rationale
13	CEFIC	13.1.1	BAT 1. CEFIC asks to accept its split view (and the related one raised by France) and add it to the concluding remarks. The detailed suggestions were provided in the split view CEFIC has raised after the Final Meeting and that have been posted on BATIS.	Change to periodic measurement	CEFIC position remains that the costs for continuous monitoring are disproportionate in comparison to environmental benefits (if any) and refers to the various documents which have been provided in regards to this matter. CEFIC supports the split view raised by France on the related matter.
14	Slovakia	13.1.1	Monitoring of emissions to air - all continuous monitoring of NO _x , CO, SO ₂ and dust emissions to air shall be mandatory only at the cracking heaters with total rated thermal input more than 100 MW.	Monitoring of emissions to air - all continuous monitoring of NO _x , CO, SO ₂ and dust emissions to air shall be mandatory installed only at the cracking heaters with total rated thermal input more than 100 MW.	We fully support CEFIC arguments and position on this issue. Additional cost due to proposed continuous monitoring equipment installation is required in case of proposed limit for rated thermal input 50 MW. Additional environmental benefit in comparison with periodic measurement is negligible.
15	Hungary	13.1.1	BAT 1. Continuous monitoring of NO _x and CO above thermal power of 50 MW. (This topic was raised after the Final Meeting and has been posted on BATIS.)	Rejection of continuous monitoring of NO _x and CO. Accepting periodic measurement	The costs for continuous monitoring are disproportional in comparison to environmental benefits (if any). Whereas, continuous emission monitoring is not a technique that, in itself, it will result in lower NO _x emissions. We propose to support France and CEFIC proposal.

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No	From	Chapter	Comment description	Proposal for modification	Rationale
16	CEFIC	13.1.2.3.2	There is a typo in BAT 13 - technique a: Absorption instead of Adsorption	Correct typo	Wrong technique is mentioned.
17	Slovakia	13.2.1.1	Upper NO _x limits for existing furnaces.	We insist on maximal NO _x limit for existing furnaces shall be kept as was originally proposed to be 200 mg/Nm ³ at 3% vol O ₂ as a monthly average or weekly, not daily as is mentioned in original proposal .We fully support CEFIC arguments and position on this issue.	Using daily average will result in huge investment to the new low NO _x burners installation without adequate environmental benefit. Monthly and weekly average is suitable for unpredictable changes in operation of furnaces e.g. bad weather conditions like storms and strong winds.
18	Slovakia	13.2.1.1	Lower NO _x limits for new furnaces.	We insist that the minimal NO _x limit for new furnaces shall be increased to 100 mg/Nm ³ at 3% vol O ₂ .We fully support CEFIC arguments and position on this issue.	Proposed NO _x limit of 60 mg/Nm ³ can be reached only with the ammonia injection (SCR or SNCR). Huge adjustment of existing technology will be required by installation SCR or SNCR unit. Higher investments for installation SCR or SNCR unit will be required.
19	Sweden	13.2.1.1	There is no BAT conclusion connected to table 13.1	Connect table 13.1 to BAT 4 and BAT 7.	

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No	From	Chapter	Comment description	Proposal for modification	Rationale
20	Bulgaria	13.5	In LVOC BREF there is no information which clearly shows the relationship between this BAT-AEL for formaldehyde and relevant reports of existing installations in the EU emissions - the set value is lower than the reports from certain plants.	-	We consider that it is necessary to provide additional justification for the set upper limit of BAT-AEL for formaldehyde.
21	CEPIC	13.6.2	In Table 13.3, BAT 51 the footnote has changed: it now reads "in case of a significant methane content" This is not what has been discussed. Conclusion of the Final Meeting has been to add a sentence "Methane measured according to ... is subtracted from the result". Hence there was no limitation agreed in the Final Meeting. Please see slide 115 after the meeting. There was a footnote that (2) methane monitored according to EN ISO 25140 or EN ISO 25139 is subtracted from the result.	Please correct and insert the footnote (2) as agreed upon in the Final Meeting	Adjust the text to the conclusions of the Final Meeting.

No	From	Chapter	Comment description	Proposal for modification	Rationale
22	Bulgaria	13.7	In the document no information is found which clearly shows the relationship between this BAT-AEL for TVOC and relevant reports of existing installations in the EU emissions - the set value is lower than reported from certain plants (upper end of 30 mg / Nm ³ instead the reported 35 mg / Nm ³).	-	We consider that it is necessary to provide additional justification for the set upper limit of BAT-AEL for TVOC.
23	Bulgaria	13.9	The sections describing the production of toluene diisocyanate (TDI) and methylene diphenyl diisocyanate (MDI) and the relevant BAT conclusions do not contain information that clearly shows the relationship between this BAT-AEL for TVOC and relevant reports of existing installations in the EU emissions - in some cases the values are set at lower levels than those reported from the relevant industrial sector.	-	We consider that it is necessary to provide additional justification for the set upper limit of BAT-AEL for TVOC.

No	From	Chapter	Comment description	Proposal for modification	Rationale
24	Germany	13.9.1	BAT-AEL "no correction for oxygen content"	Please add footnote (5) after "no correction of oxygen content": "(5) in case an incinerator for the combined treatment of liquid waste and the waste gas is used the reference oxygen level 11% applies"	<p>The Air Emission Survey TDI/MDI the industry provided after D1 shows 18 waste gas streams. For 10 (thermal and regenerative) oxidizer, for 8 streams "only scrubber" are declared as main abatement techniques. The definition g) in the survey reads: "Concentration of emission [mg/Nm³] to air (end of pipe).</p> <p>The emission values are standardised at 11 % oxygen in waste gas for thermal oxidiser". There was no information regarding the oxygen level for the waste gas stream data with wet gas scrubbers as abatement technique. TWG decided in the FM that no oxygen reference value 11 % should apply for all these waste gas streams which include "only scrubbers", non-oxidative abatement. But it was overlooked that the description for BAT 66 reads: "Instead of a thermal oxidizer, an incinerator for the combined treatment of liquid waste and the waste gas may be used."</p>

No	From	Chapter	Comment description	Proposal for modification	Rationale
					For the incineration of waste an oxygen reference value of 11 % should apply. As for thermal oxidisers the emission values were standardised at 11 % oxygen the impact of the additional footnote is in line with the conclusions of the final meeting.
25	CEFIC	13.9.1.	Wrong technical description "the use of a waste incinerator as a thermal oxidizer for the treatment of waste gas streams from the production of TDI/MDI and/or EDC/VCM is covered by these conclusions".	Add two footnotes or additions to the text under BAT 66 as follows: a) If the addition of waste gas from TDI/MDI/EDC/VCM units causes the incineration units to treat in exceeds of the thresholds under the WI BREF (3 t/day non-hazardous and 10 t/day hazardous waste) this incinerator will fall under the WI BREF and b) Table 13.6 does not supersede BAT-AELs of already existing waste incineration units	There are two concerns: a) A thermal oxidizer must not necessarily be a waste incinerator. If the waste gas from TDI/MDI/EDC/VCM is fed into such a unit, it does not become waste incinerator under WI-BREF, unless the total flow of hazardous wastes in this system exceeds 10t/day. b) if a unit is already a waste incinerator under the WI BREF the BAT-AELs in table 13.6 cannot overrule the already existing requirements for the waste incinerator

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No	From	Chapter	Comment description	Proposal for modification	Rationale
26	CEPIC	13.9.2	Table 13.7 & table 13.8 - applicability is restricted to plants with a waste water management according local disaggregation defined by chemical reaction. For integrated sites existing permit and plant design do not fit into the given description.	Delete table 13.7 and table 13.8 (as proposed during final meeting) or add a footnote that the BAT AEPL are not applicable to production plants of integrated sites.	There was no data collection possible and therefore the AEPL values are not data based. Two (> 2/3 of the European production capacity) of the four existing plants in Europe are newly build during the revision process of LVOC BREF. Only 4 companies are operating such units - due to competition law (especially US and Chinese) a data exchange was very limited. It will be expected that only 3 plants will continuously operate in the future. Application of these BAT AEPLs does not increase the environmental protection level. All plants are operating on integrated sites with a stand-alone operating waste water treatment plant. The design of these plants is aligned to the volume and quality of the waste water emitted by these plants, regulated by CWW BREF. The existing permit situations do consider this plant design. In at least one of the mentioned plants proprietary technology is used, where the operator is not willing to publish details.
27	Sweden	13.10.1.1	There is no BAT conclusion connected to table 13.10	Connect table 13.10 to BAT 4.	-

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No	From	Chapter	Comment description	Proposal for modification	Rationale
28	CEFIC	13.10.1.2	The wording of BAT 76 implies that catalytic oxidisers are not BAT.	"BAT is to treat the combined waste gas streams from EDC and/or VCM production by using a thermal oxidiser (or a catalytic oxidiser in an existing plant) followed by two-stage wet scrubbing." Alternatively, add an applicability comment "applicable to new plants or after a major upgrade".	Ensure that catalytic oxidation is considered by permitting authorities as an acceptable option in existing plants, in the absence of a major upgrade.

No	From	Chapter	Comment description	Proposal for modification	Rationale
29	CEFIC	14	Table 14.2 - dissenting views: applicability is restricted to plants with a waste water management according local disaggregation defined by chemical reaction. For integrated sites existing permit and plant design do not fit into the given description.	Support the local competent authorities by enlarging the applicability of table 13.7 and 13.8.	The applicability is restricted to one plant design; all other existing processes will not be considered. Two (> 2/3 of the European production capacity) of the four existing plants in Europe are new build during the revision process of LVOC BREF. Only 4 companies are operating such units - due to competition law (especially US and Chinese) a data exchange was very limited. It will be expected that only 3 plants will continuously operate in the future. Application of these BAT AEPLs does not increase the environmental protection level. All plants are operating on integrated sites with a stand-alone operating waste water treatment plant. The design of these plants is aligned to the volume and quality of the waste water emitted by these plants, regulated by CWW BREF. The existing permit situations do consider this plant design.

No	From	Chapter	Comment description	Proposal for modification	Rationale
30	Sweden	14	Degree of consensus reached during the information exchange	Change "However, five dissenting views were expressed which are summarised in Table 14.2." to "However, ten dissenting views were expressed. Five of them have been assessed to fulfil the conditions set out in Section 4.6.2.3.2 of Commission Implementing Decision 2012/119/EU. They are summarised in Table 14.2."	Clarifies that there has been more than five dissenting views during the final meeting.
31	Hungary	14	Table 14.2 Dissenting views evaluation: BAT AEL for emissions of NO _x raised by Germany, Sweden and the EEB on the upper and lower BAT-AEL limits for NO _x emissions from existing cracking furnaces: Reducing the upper end of emission limit (from 200 to 180 mg/Nm ³) while reducing of the period (monthly average to daily average).	Keep the original D1 version parameters: 200 mg/Nm ³ NO _x as monthly average.	Crackers are responsible only for 0.16% of total NO _x emissions on EU level. Monthly averages or even yearly averages are all well below the BAT-AEL limit of 180 mg/Nm ³ but there are about few days where the upper BAT-AEL limit of 180 mg/Nm ³ might be exceeded. The exceedances on these given days could be associated with a feedstock change, a change in fuel gas quality, a sudden change in atmospheric weather conditions, a sudden change in cracking severity or decoking or furnace swap, all factors leading to a sudden change of combustion conditions in the furnace.

Annex B

No	From	Chapter	Comment description	Proposal for modification	Rationale
32	Hungary	14	Table 14.2 Dissenting views evaluation: BAT AEL for emissions of NO _x raised by EEB: Reducing the lower end of emission limit (from 70 to 65) while reducing of the period (monthly average to daily average).	Keep the original D1 version parameters. (70 mg/Nm ³ NO _x as monthly average)	Crackers are responsible only for 0.16% of total NO _x emissions on EU level. Reducing the lower end of emission limit (from 70 to 65) while reducing of the period (monthly average to daily average) are reinforcing each other resulting in a much more stringent limit compared to original D1 version. On the top of this, using of a stringent lower end would result in a higher chance of an increased NH ₃ emission.